

# H820 Series Industrial Grade Cellular Router

## User Manual

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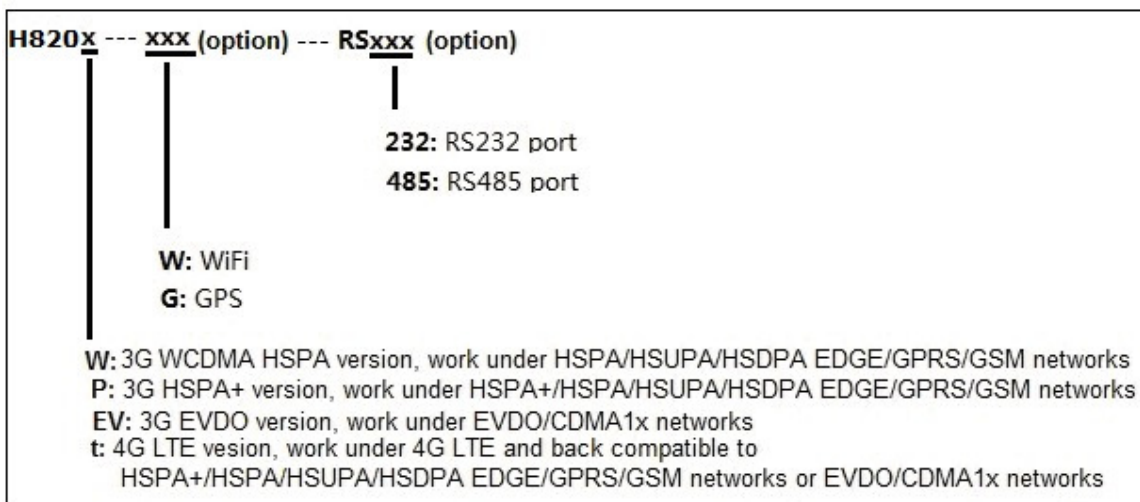
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## 1 Preparation job before configuration

### 1.1 Learn your router version and feature

1) H820 series contains different version and option feature. Please learn it before using it.

H820 series defines the model as follows,



Notes: please be informed the following features are option. Please indicate with your orders.

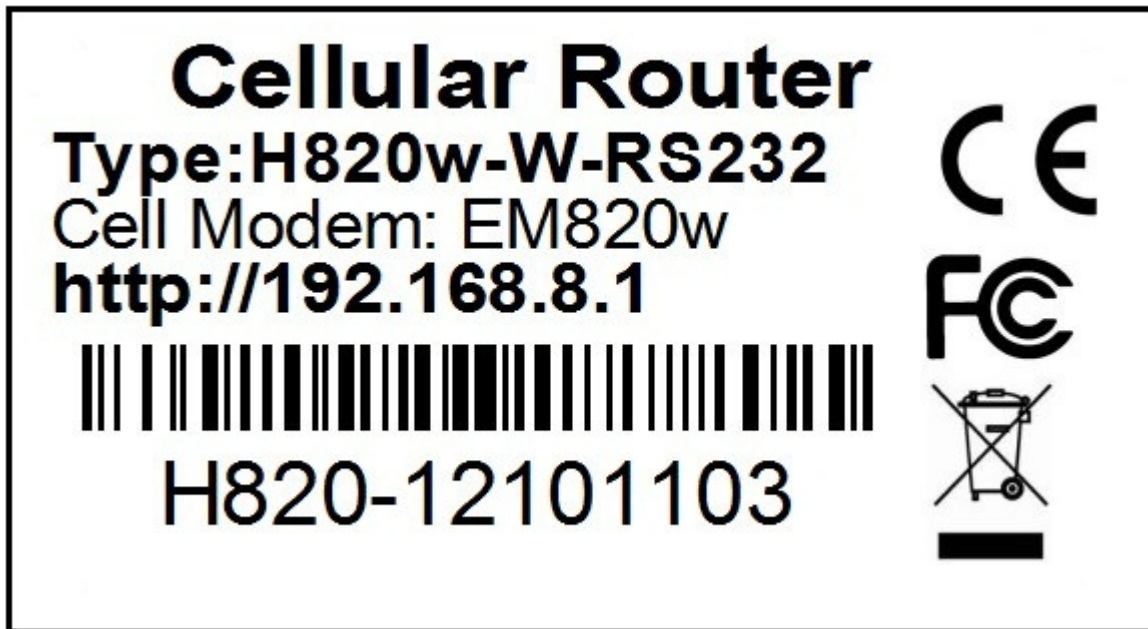
- 1) cellular diversity receiving
- 2) WiFi Feature
- 3) GPS feature
- 4) Serial to cellular feature, RS232 or RS485 can choose one
- 5) Voice/SMS control
- 6) DC7V~50V
- 7) BGP, OSPF.

2) Find the modem type info at the back cover of the router. This will be used while do configuration.

For example: the following label indicates the version, type and inside module modem.

The module modem name is "EM820w", remember this and will select this module name while do configuration.





## 1.2 Prepare SIM Card and working condition

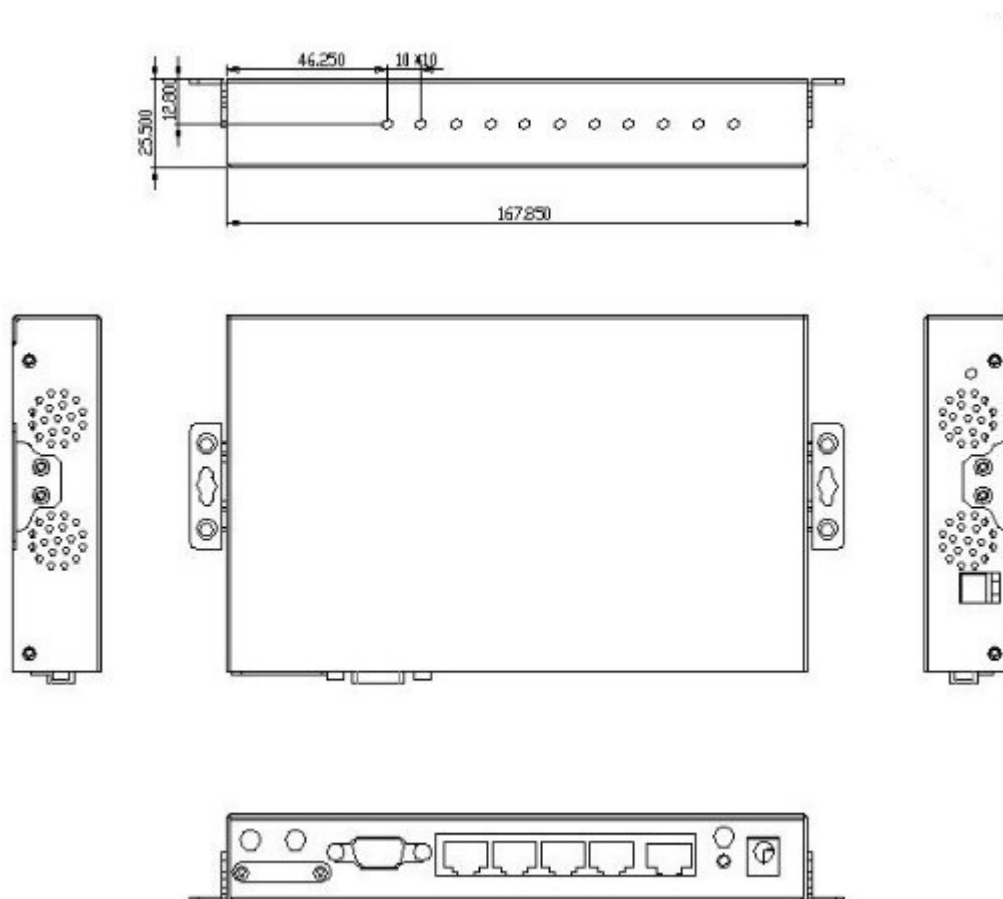
- 1) For GSM/GPRS/EDGE/HSDPA/HSUPA/HSPA/HSPA+/4G LTE networks or TD-SCDMA networks, please get a SIM card with data business.
- 2) For CDMA2000 EVDO/CDMA1x networks, please get a UIM card with data business or inform us before order if the network uses non-ruim (nam-flashing).
- 3) Make sure the sim card or uim card is with enough data business and balance.
- 4) Make sure the signal is good enough where you test or install the router. Weak signal will make the router no work. If you find your signal strength is not good, please contact us for high gain antenna.

## 2 Hardware Installation

This chapter mainly describes the appearance, model and function of H820 series and how to install and set the configurations.

1. *Overall Dimension*
2. *Accessories Description*
3. *Installment*

### 2.1 Overall Dimension



## 2.2 The Ports

Back Picture:



ANT1: for cellular

ANT2: for cellular diversity receiving, or for GPS

ANT3: for WiFi

SIM: for sim card

COM: DB9 for serial port.

LAN1~LAN4: LAN RJ45 Ethernet ports.

WAN: WAN RJ45 Ethernet ports.

RST: sys reset button

PWR: DC power socket. DC5~40V, DC5~50V option depends on the router version.



GND: DC wire ground

VCC: DC wire positive pole. DC5~40V, DC5~50V option depends on the router version

WPS: WPS button

## 2.3 Installment

H820 series should be installed and configured properly before putting in service. The installation and configuration should be done or supervise by qualified engineer.

**Attention:**

Do not install H820 series or connect/disconnect its cable when it is power on.

## 2.4 SIM/UIM card installed

If your router has SIM/UIM card protector, please remove it, insert the sim card correctly, and fix the protector.

If your router has no SIM/UIM card protector, please insert the sim card correctly.

**Attention:** *SIM/UIM card does not reach the designated position, the equipment can not find a card, can't work normally, therefore inserted a try to check again for a SIM card is stuck fast.*

## 2.5 The installation of terminal blocks

This chapter is for version with terminal blocks only. Default, the H820 is with DB9 connector. Please use DB9 cable to connect H820 and the equipment directly.

**The following is for version with terminal blocks only:**

H820 uses pluggable terminals to connect the user's data and the power supply. Spacing:

3.81mm ,10 Pin; User data and power supply suggestion: 14~24AWG. Please refer to the table 2-4 for the interface definition of the power cable and connection sequence. Specific interface definition of the power cable and connection sequence you can read on the labels of H820 products. Using 14~24AWG cable and referring to H820 products labels or the bellowed interface definition and connection sequence, you need to use the oblate screw driver to fix the cable to the connecting jacks of the pluggable terminal. After successfully connection, you need to insert the terminal into the corresponding position in the bottom of the H820 products.

**Notes:** Connection sequence should be accurate. Cable's insulating striping length is about 7mm. (For safety, insulating striping length should be too long). Please refer to the picture.



Attention:

1. The power cable should be connected correctly. We “suggestion double check before switch it on .Wrong connections may destroy the equipment.
2. Power terminals: Pin 1 and Pin 2;
3. Here : Pin 2 is “GND”, PIN 1 is power input “Vin”(DC5~40V, or DV5~50V).

PIN	Signal	Description	Note
1	Vin	+7-30V DC Input	Current : 12V/1A
2	GND	Ground	
3	Tx	Transmit Data	
4	Rx	Receive Data	
5	PGND	Ground	
6	Reset	Reset	Reset Pin has the same function with reset button. In the usage, it needs to be short connected to the GND. After giving the device a 1 sec low level, it will reboot.3 seconds, the device will restore factory settings
7	SPI-I ( IO0 )	General Purpose I/O	
8	SPI-O (IO1 )	General Purpose I/O	
9	SPI-CLK (IO2 )	General Purpose I/O	
10	SPI-EN (IO3 )	General Purpose I/O	
I/O Terminal on router		Serial port (RS485 or RS232)	
Port 2		Port 5	
Port 3		Port 3	
Port 4		Port 2	

## 2.6 Grounding

To ensure a safe, stable and reliable H820 series operation, Router cabinet should be grounded properly.

## 2.7 Power Supply

H820 series can be applied to complicated external environment and usually the power range is very large. So in order to fit the complicated application environment and improve the stability of the system, H820 series is designed with advanced power management technology. The DC power supply electronic to the device via the pluggable terminal PIN 2(GND) and PIN 1(Vin). Please refer to the above table for the detail definition of the terminal.

Normally, H820 series input powers supply is +5 ~ +40V (if your H820 support 50V, the option is +5~+50V). In most cases, the standard configuration is 12V/1A.

## 2.8 LED and Check Network Status

Please connect the antenna after you successfully connect to the cable. And then insert the valid SIM/UIM card and provide the power to the H820 series via the cable. After provide the power to H820, if the SYS LED starts to blink in a few seconds, that means the system start-up is normal; if the CELL LED works, that means the network is online; if the VPN light works, that means VPN tunnel has been set up. Please refer to the below table for the situation of the indication lights.



LED	Indication Light	Description
SYS	On for 25 seconds	On for 25 seconds after power supply
	blink	System set-up normally
	Off or still on after 25 seconds	System set-up failure
LAN1~LAN4	blink	Data transmission in Ethernet
	Off	Ethernet connection abnormal
	On	Ethernet is connected
VPN	On	VPN tunnel set-up
	Off	VPN tunnel set-up failure or unactivated
CELL	On	Access to the Internet
WIFI	On	Enable
	Off	Disable
WAN	blink	Data transmission in Ethernet

	Off	Ethernet connection abnormal
	On	Ethernet is connected
Signal	Off	No signal, or signal checking is not ready
	4s blink 1 time	Signal bar is 1
	3s blink 1 time	Signal bar is 2
	2s blink 1 time	Signal bar is 3
	1s blink 1 time	Signal bar is 4
	1s blink 2 times	Signal bar is 5

## 3 Software configuration

1. Overview
2. How to log into the Router
3. How to config web

### 3.1 Overview

H820 series routers with built-in WEB interface configuration, management and debugging tools, user should configuration the parameters first; and it could be altered the parameters flexibility and software upgrades and simple testing. User can set up and manage the parameters of the router on its interface, detail step are bellow:

### 3.2 How to log into the Router

#### 3.2.1 Network Configuration of the Computer.

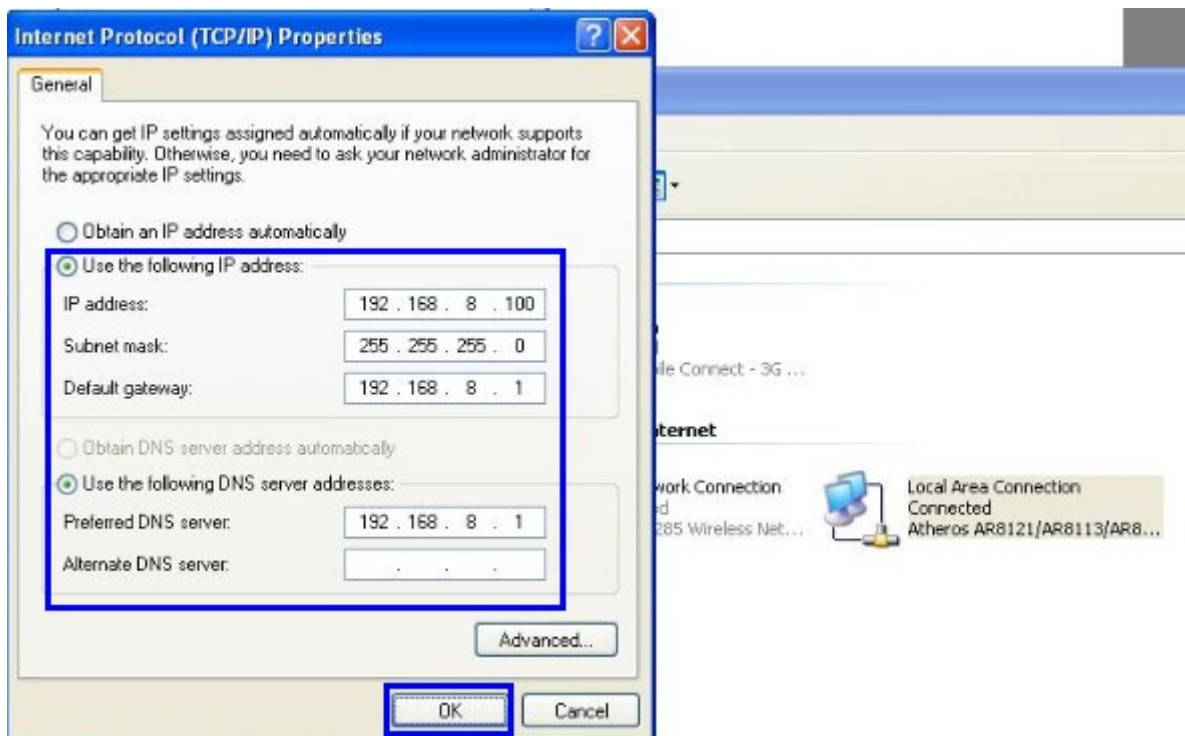
The router default parameters as follow

Default IP: 192.168.8.1, sub mask: 255.255.255.0.

There are two ways to set the PC's IP address.

##### Way 1) Manual setting

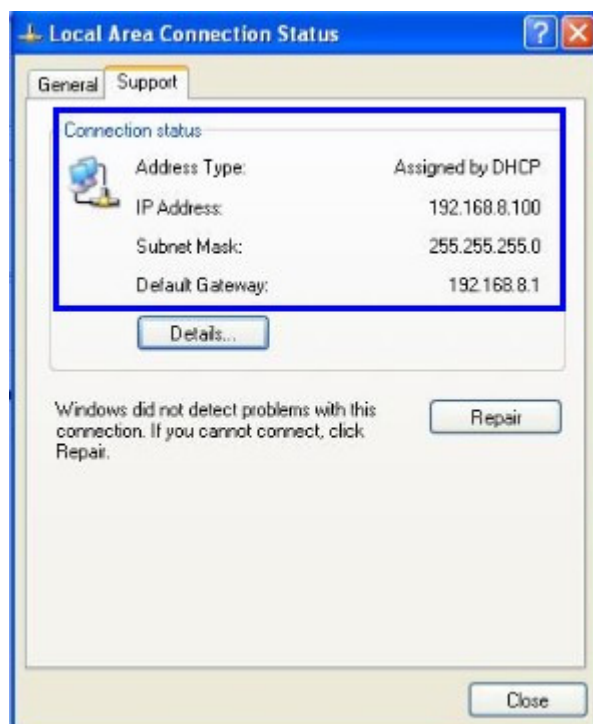
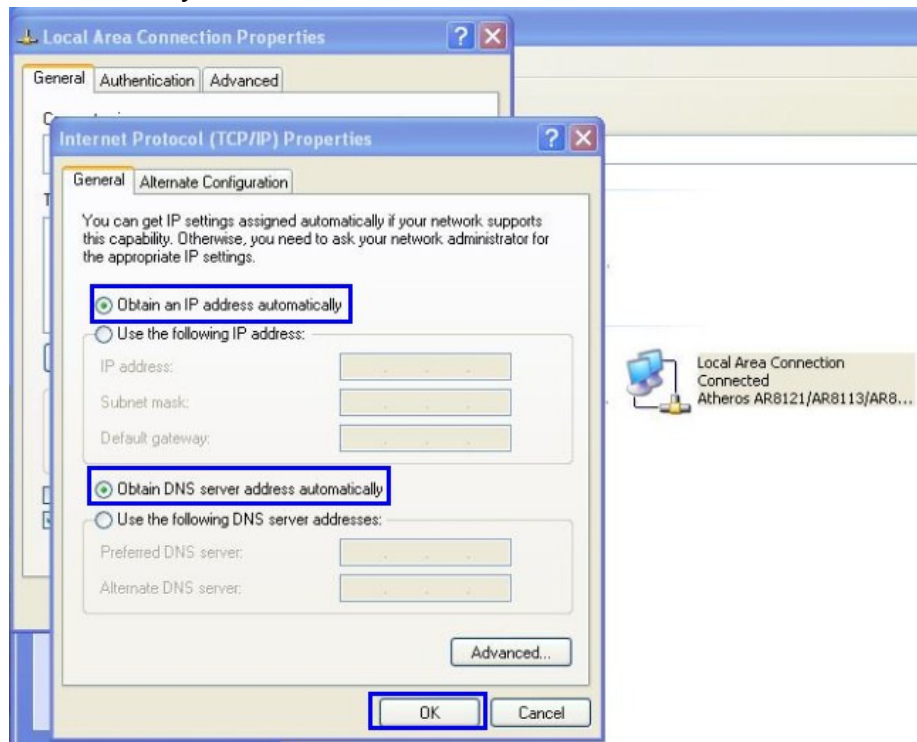
Set the PC IP as 192.168.8.xxx (xxx = 2~254), subnet mask: 255.255.255.0, default gateway: 192.168.8.1, primary DNS: 192.168.8.1.





## Way 2) DHCP

Choose “Obtain an IP address automatically” and “Obtain DNS server address automatically”.



After IP setting, check it by ping. Click Windows start menu, run, execute “cmd” command. Input “ping 192.168.8.1” in the DOS window.

```
D:\Documents and Settings\ttt>ping 192.168.8.1
Pinging 192.168.8.1 with 32 bytes of data:
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Reply from 192.168.8.1: bytes=32 time<1ms TTL=64
Ping statistics for 192.168.8.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

This information means the connection is work.

```
Pinging 192.168.8.1 with 32 bytes of data:  
Destination host unreachable.  
Destination host unreachable.  
Destination host unreachable.  
Destination host unreachable.  
  
Ping statistics for 192.168.8.1:  
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
Request timed out.  
Request timed out.  
Request timed out.  
Request timed out.
```

This information means the connection is failure. If so, please check the network cable connection and IP address setting, and can refer to *Chapter 4.9*.

### 3.2.2 Log into Router

- Open the Web Browser, and type <http://192.168.8.1> into the address field and press Enter bottom in your computer keyboard.
- Type User Name “admin” and Password “admin” in the pop-up Login Window, and then press the “Apply” button.



- If you type into the correct User Name and Password, you will get the access into the Router's Web Management Page.

## Ethernet Port Status



## Access Point Status

System Info	
Series	H820
SN	086412100296
Software Version	2.2.11 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	22 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM770_820_Series
IMEI/ESN	354283040340808
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2

## 3.3 How to configure web

### 3.3.1 Main Menu as below Picture

## Ethernet Port Status



## Access Point Status

System Info	
Series	H820
SN	086412100296
Software Version	2.2.11 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	22 min
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM770_820_Series
IMEI/ESN	354283040340808
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2

### 3.3.2 Operation Mode

[open all](#) | [close all](#)

- Router
  - Status
  - Operation Mode**
  - DTU
  - Link Backup
  - GPS
  - SMS/Voice
  - VRRP
  - Internet Settings
  - VPN
  - WIFI
  - Firewall
  - Administration

### Operation Mode Configuration

You may configure the operation mode suitable for you environment.

☐ **Bridge:**  
All ethernet and wireless interfaces are bridged into a single bridge interface.

☒ **Gateway:**  
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.

☐ **AP Client:**  
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Ethernet wan port as wan in AP Client Mode: ☒

NAT Enabled:

TCP Timeout:

UDP Timeout:

- **Bridge**  
All Ethernet and wireless interfaces are bridged into a single bridge interface.
- **Gateway**  
The first Ethernet port is treated as WAN port. The other Ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
- **AP Client**

The wireless apcli interface is treated as WAN port and the wireless ap interface and the Ethernet ports are LAN ports.

➤ **NAT**

Network Address Translation

Normally and default we select “Gateway mode”, and keep all other parameters as default.

### 3.3.3 WAN Settings

open all | close all

Router

- Status
- Operation Mode
- DTU
- Link Backup
- GPS
- SMS/Voice
- VRRP
- Internet Settings
  - WAN**
  - LAN
    - DHCP clients
    - VPN Passthrough
    - Static Routing
    - Dynamic Routing
    - QoS
    - SNMP
    - Cell ICMP Check
    - Lo Interface
  - VPN
  - WIFI
  - Firewall
  - Administration

### Wide Area Network (WAN) Settings

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

WAN Connection Type: Cell Network

Cell Mode	
Cell Modem	HUAWEI-EM770_820_Series
Modem Description	HUAWEI WCDMA 3G modem
Network Type	AUTO
Online Mode	Keep Alive
Parameter Groups	WCDMA View Delete
Advance Parameter Groups	
Advance Cell Options	

MAC Clone	
Enabled	Disable

Apply Cancel

➤ **WAN Connection Type**

Support Static IP, DHCP, PPPoE, L2TP, PPTP, CELL Network.

#### 3.3.3.1 WAN type – Cell Network

➤ **Cell Modem**

System supports different cell modem. Default, the router is with right Cell Modem name before shipment. If you replace with other different Cell Modem, must select *AUTO\_DETECT* and click *Apply button* to reboot the router, the router will automatically check the Cell Modem name.

Notes: the Cell Modem Type was marked on the back of the router.

For example, it shows the following picture. H820 is the router series name, H820w-W-RS232 is the part number name. And the EM820w Cell Modem is the Cell Modem name.





➤ **Modem Description**

It will display related description after the H820 router detects the Cell Modem.

➤ **Network Type**

Select the type. Different Cell Modem supports different types. Default select *AUTO*.

➤ **Online Mode**

**Keep Alive:** means always online. The router will keep online whatever there is data for transmission or not.

**On Demand:** The router will dialup when there is data for transmission.

Online Mode	On Demand ▼
	Idle Time (minutes): 5

Idle time (minutes): fill in the time. For example, fill in 5, the router will offline after 5 minutes if there is no data for transmission.

**On Time:** router dialup or offline with schedule. Totally supports 4 groups.

Online Mode	On Time ▼																																
	<p>set NTP Server in management page before used. example:15:50—22:30</p> <table border="1"> <tr> <td><input type="checkbox"/></td> <td></td> <td>:</td> <td></td> <td>→</td> <td></td> <td>:</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>:</td> <td></td> <td>→</td> <td></td> <td>:</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>:</td> <td></td> <td>→</td> <td></td> <td>:</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td></td> <td>:</td> <td></td> <td>→</td> <td></td> <td>:</td> <td></td> </tr> </table>	<input type="checkbox"/>		:		→		:		<input type="checkbox"/>		:		→		:		<input type="checkbox"/>		:		→		:		<input type="checkbox"/>		:		→		:	
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<input type="checkbox"/>		:		→		:																											

➤ **MAC Clone**

Enable and disable the MAC clone function.

➤ **Parameter Groups**

APN Group Option	Marks
AUTO	Only keep for future use. Normally do not select this
WCDMA	If your router is 4G LTE or WCDMA HSPA/HSDPA/HSUPA/HSPA+/EDGE/GPRS/GSM version, please select this one
CDMA	If your router is CDMA2000 EVDO or CDMA1x version, please select this one

TD-SCDMA	If your router is TD-SCDMA HSDPA/HSUPA version, please select this one
User-defined (only show after user defined one)	If you add one APN group with your defined parameters, please select this one

### ➤ Advance Parameter Groups

Click *Advance Parameter Groups*, *Cell Modem Parameters Groups* expand. Define one APN Group to fit your network and sim card.

Cell Modem Parameters Groups	
Parameters Groups Name	WCDMA_test_E-Lins
Dialup	*99#
APN	3gnet
User	wap
Password	wap
Command	
Auth Type	AUTO
Pin Code	
Local IP	
MTU	
Note:	If change this parameters groups, please press Add/Edit button first!
<div>Advance Parameter Groups</div> <div>Add/Edit</div> <div>Advance Cell Options</div>	

Fill in the related parameters. And **DO NOT FORGET TO CLICK “Add/Edit” button**.

**Parameters Groups Name:** you can fill in the name freely. But keep No Space between characters.

Parameters Groups Name	WCDMA_test_E-Lins	Right name
Parameters Groups Name	WCDMA_test E-Lins	Wrong Name
Parameters Groups Name	WCDMA test E-Lins	Wrong Name

**Dialup:** fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier;

**APN:** fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier;

**User:** fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier; If yours has no user name, please input out default value, otherwise the router may not dialup. Our default value for GSM/WCDMA/LTE is “wap”, and for CDMA/EVDO is “card”.

**Password:** fill in the related parameters. Get this parameter from the Sim Card Provider or Carrier; If yours has no user name, please input out default value, otherwise the router may not dialup. Our default value for GSM/WCDMA/LTE is “wap”, and for CDMA/EVDO is “card”.

**Command:** this is for command to control the module or router. Normally is for debug use.

**Auth Type:** Three options (AUTO, PAP, CHAP/MS-CHAP/MS-CHAP2). Please confirm your carrier provide the types of authentication. Normally select *AUTO*. If not work, try to use *PAP* or *CHAP*.

**PIN code:** if necessary. Most of sim card has no PIN code, and then keep it as blank.

**Notes:** Please press Add/Edit button to add your defined APN parameters. At *Parameter Groups*, it will automatically choose the defined *APN Parameter Groups*.

### ➤ Advance Cell Options

**Notes:** If you don't know advance cell parameters very well, please keep default settings. Otherwise the router may not work.

Click *Advance Parameter Groups*, *Cell Modem Parameters Groups* expand. 2<sup>nd</sup> click to contract.

Cell Options Advances Settings	
LCP	<input type="radio"/> Disable <input checked="" type="radio"/> Enable interval(sec): <input type="text" value="10"/>
PAP	<input type="radio"/> Disable <input checked="" type="radio"/> Auto
CHAP	<input type="radio"/> Disable <input checked="" type="radio"/> Auto
MS-CHAP	<input type="radio"/> Disable <input checked="" type="radio"/> Auto
MS-CHAP-V2	<input type="radio"/> Disable <input checked="" type="radio"/> Auto
Compression Control Protocol	<input checked="" type="radio"/> Disable <input type="radio"/> Require
Address/Control Compression	<input checked="" type="radio"/> Disable <input type="radio"/> Require
Protocal Field Compression	<input checked="" type="radio"/> Disable <input type="radio"/> Require
VJ TCP/IP Header Compression	<input checked="" type="radio"/> Disable <input type="radio"/> Require
Connection-ID Compression	<input checked="" type="radio"/> Disable <input type="radio"/> Require
BSD-Compress compression	<input checked="" type="radio"/> Disable <input type="radio"/> Require
Deflate compression	<input checked="" type="radio"/> Disable <input type="radio"/> Require
MPPE Encryption	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
MPPE 40bit	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Refuse Stateless Encryption	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
More Options (~' for separate)	<input type="text"/>

LCP: ppp dialup monitor. At *interval(sec)*, fill in the time for every check. For example, if fill in 10, the router will get LCP check every 10 seconds.

Other parameters: user can disable or enable or define it.

**Warmly Reminding:** do not forget to click *Apply* button after setting.



### 3.3.3.2 Cell ICMP Check

ICMP check and Reboot Settings	
Active	<input checked="" type="checkbox"/>
Check method	<input type="text" value="www.google.com"/> <input type="button" value="Host/IP check"/>
	<input type="text" value="112.134.33.8"/> <input type="button" value="Host/IP check"/>
Check interval time (sec)	<input type="text" value="60"/> (60-86400)
Check Count	<input type="text" value="3"/> (3-1000)
Reboot Count Before Sleep	<input type="text" value="3"/> (2-50)
Sleep Time (min)	<input type="text" value="5"/> (0-43200)
Comment: It is only used for Cell Keep_Alive and On_Time mode! if you active link_backup you mask set the interval bigger the 3 min	
<input type="button" value="Apply"/>	

- **Active:** tick it to enable ICMP check feature
- **Check method:** fill in checking domain name or IP. Click *HOST/IP check* button to verify before using it.
- **Check interval time (sec):** set the interval time of every check
- **Check Count:** set the checking count number
- **Reboot Count Before Sleep:** H820 Router will sleep to stop checking after failed with set times.
- **Sleep Time (min):** H820 Router sleep timing before resume check.

#### Example with above picture:

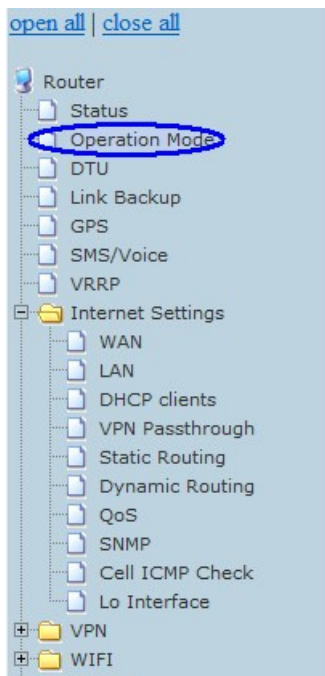
H820 Router check "[www.google.com](http://www.google.com)" and "112.134.33.8", it will check 3 times. After the previous check, it will do next check after 60 seconds. Totally it will check 3 times. If 3 times all failed, H820 Router will reboot. If reboots 3 times continuously, H820 Router goes to sleep to stop checking. The sleep time is 5 minutes. After 5 minutes, H820 Router resume to cycle the checking.

### 3.3.3.3 AP Client mode

Set H820 as an AP client, H820 will connect the upper WiFi router or WiFi AP.

#### Step1)

H820 web -- Operation Mode – Choose "AP Client", and click apply button. Wait some time until the H820 make the setting works.



## Operation Mode Configuration

You may configure the operation mode suitable for you environment.

- ☐ **Bridge:**  
All ethernet and wireless interfaces are bridged into a single bridge interface.
- ☐ **Gateway:**  
The first ethernet port is treated as WAN port. The other ethernet ports and the wireless interface are bridged together and are treated as LAN ports.
- ☒ **AP Client:**  
The wireless apcli interface is treated as WAN port, and the wireless ap interface and the ethernet ports are LAN ports.

Ethernet wan port as wan in AP Client Mode: ☒

NAT Enabled: Enable ▾

TCP Timeout: 180

UDP Timeout: 180

Apply Cancel

The router will switch to AP Client mode.

### Step2)

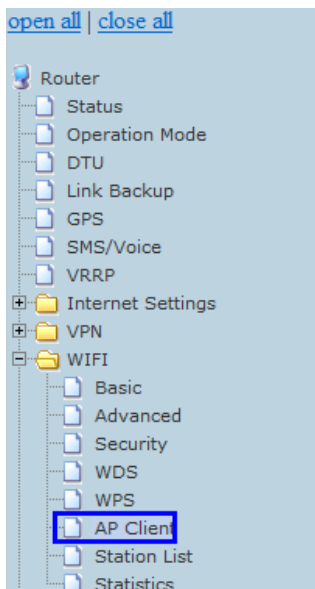
WIFI – AP Client

Here fill in the parameters.

SSID: input the WiFi router's SSID

Security Mode: choose correct one to match the WiFi router/AP you want to connect.

Encryption Type: choose correct one to match the WiFi router/AP you want to connect.



## AP Client Feature

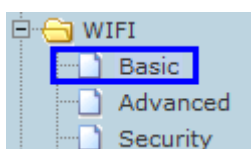
You could configure AP Client parameters here.

AP Client Parameters	
SSID	<span>elins123</span>
MAC Address (Optional)	<span></span>
Security Mode	<span>WPA2PSK ▾</span>
Encryption Type	<span>AES ▾</span>
Pass Phrase	<span>••••••••••</span>

Apply Cancel

### Step3)

WIFI -- Basic



Here please select the right channel the same with the upper WiFi Router/AP you want to connect.

## Basic Settings

This is from the upper WiFi Router/AP

Wireless Network Mode: B/G/N-Mixed ▼

Wireless Channel: 9 - 2.452GHz ▼

Multiple BSSID: ☒ Enabled ☐ Disabled

SSID	SSID Name	SSID Broadcast
SSID1	elins123	Enabled ▼
SSID2	E-Lins	Disabled ▼
SSID3		Enabled ▼
SSID4		Enabled ▼

Then choose the same Channel in H820 router as follows,

Broadcast Network Name (SSID)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
AP Isolation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
MBSSID AP Isolation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
BSSID	08:66:01:00:07:C2
Frequency (Channel)	2452MHz (Channel 9) ▼

Step4)

Internet Settings – WAN

## Wide Area Network (WAN) Settings

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

WAN Connection Type: DHCP (Auto config) ▼

**DHCP Mode**

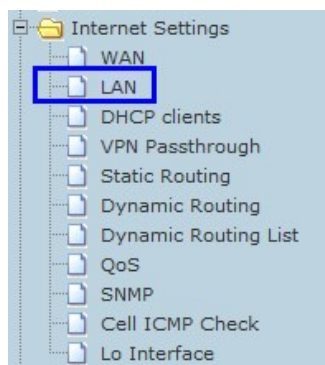
Hostname (optional)

**MAC Clone**

Enabled  Disable ▼

At “WAN Connection Type”, choose “DHCP (Auto Config)”, and click “Apply” button. The H820 router will automatically connect the WiFi Router and get local IP from the wifi router. You can check at status info page.

### 3.3.4 LAN Settings



LAN Setup	
IP Address	192.168.8.1
Subnet Mask	255.255.255.0
LAN 2	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server ▼
Start IP Address	192.168.8.100
End IP Address	192.168.8.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.8.1
Lease Time	86400

Setting the LAN parameters, include IP address, sub mask, VLAN, DHCP, etc.

#### 3.3.4.1 Router Gateway IP

Default, the Router LAN IP is 192.168.8.1. If users want to modify it, please change the related parameters.

LAN Setup	
IP Address	192.168.1.1
Subnet Mask	255.255.255.0
LAN 2	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	08:66:01:00:04:A1
DHCP Type	Server ▼
Start IP Address	192.168.1.100
End IP Address	192.168.1.200
Subnet Mask	255.255.255.0
Primary DNS Server	168.95.1.1
Secondary DNS Server	8.8.8.8
Default Gateway	192.168.1.1
Lease Time	86400

IP Address: change the value you need

Start IP Address: for DHCP start IP

End IP Address: for DHCP end IP

Default Gateway: manually change it after you modify the *IP Address*.

### 3.3.4.2 MAC binding

H820 Router supports 3 groups of MAC Binding. The parameter value format is as followed picture.

Statically Assigned	MAC: 00:21:86:61:7A:88
	IP: 192.168.8.2
Statically Assigned	MAC:
	IP:
Statically Assigned	MAC:
	IP:

### 3.3.4.3 DNS Proxy

H820 Router default enables the DNS Proxy. With this, the H820 router can get DNS automatically and assigned to the PC/Device. If disable the DNS Proxy, please input correct DNS for your PC/Device, otherwise, it may not work correctly.

DNS Proxy	Enable ▼
-----------	----------

### 3.3.5 DHCP Client

#### DHCP Client List

You could monitor DHCP clients here.

DHCP Clients			
Hostname	MAC Address	IP Address	Expires in

List the Clients which gain IP address from DHCP.

### 3.3.6 Configure Static Routing

This section mainly introduces what is Routing Table and how to configure static router.

- Routing Table

This page shows the key routing table of this router.

Current Routing table in the system:									
No.	Destination	Netmask	Gateway	Flags	Metric	Ref	Use	Interface	Comment
1	10.64.64.64	255.255.255.255	0.0.0.0	5	0	0	0	WAN (ppp0)	
2	255.255.255.255	255.255.255.255	0.0.0.0	5	0	0	0	LAN (br0)	
3	192.168.8.0	255.255.255.0	0.0.0.0	1	0	0	0	LAN (br0)	
4	0.0.0.0	0.0.0.0	10.64.64.64	3	0	0	0	WAN (ppp0)	

- New Static Router

This page is about how to set static routing function of the router.

Add a routing rule	
Destination	<input type="text"/>
Range	Host <input type="button" value="v"/>
Gateway	<input type="text"/>
Interface	LAN <input type="button" value="v"/> <input type="text"/>
Comment	<input type="text"/>

**Destination:** please enter Target Host or IP network segment

**Range:** Host or Network can be chosen

**Gateway:** IP address of the next router.

**Interface:** You can choose the corresponding interface type.

**Comment:** some notes

Notice:

- Gateway and LAN IP of this router must belong to the same network segment.
- If the destination IP address is the one of a host, and then the Subnet Mask must be

255.255.255.255.

- If the destination IP address is IP network segment, it must match with the Subnet Mask. For example, if the destination IP is 10.0.0.0, and the Subnet Mask is 255.0.0.0.

## 3.3.7 VPN

### 3.3.7.1 IPSEC

### Ipsec VPN

Using IPSec protocol to achieve remote access.

IPSEC Vpn List						
No.	State	Name	service mode	Remote Gateway	Local Address	Remote Address
1	<input checked="" type="checkbox"/>	jordan	client	195.8.171.180	192.168.1.0	10.10.10.0

Enable

Disable

Delete

Edit

Add Application

IPSec connect name   
 you can input DEV+DeviceID+[...] to bind device  
 example:DEV281250D52F2A1452.vpn1.com

service mode

Mode

Remote IPSec gateway

Local IP address

VPN IP address

IP subnet mask

Remote IP address

VPN IP address

IP subnet mask

Key Exchange Method

Authentication

Pre-Shared Key

Perfect Forward Secrecy

NAT Traversal ☒

Advanced IKE Settings

- **IPsec connect name:** make sure the name in client and server are same, we suggest to use domain name (111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name (DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H820's ID in the Status interface.
- **Service Mode:** Server/Client
- **Mode:** Main/Aggressive. The Aggressive mode is commonly used.
- **Remote Gateway:** This choice just appears in the Client mode and it is used to fill the IP address in the Server.
- **Local IP address:** Fill LAN IP of this device. You can fill an IP or a network segment.
- **Remote IP address:** Fill the IP of the other router.
- **Authentication:** Commonly, Pre-Shared Key is chosen. And the Client and Server must choose the same key.
- **Advanced AKE settings:** There are some encryption methods in this field. You must use the settings in this field when VPN tunnel needs to be built between H820 and other brand VPN server.
- **Example: Connected cisco 7200 and H820**  
**How to config H820 as VPN client**  
 IPsec Name: make sure the name in client and server are same, we suggest to use domain name(111.vpn1.com). if you want to build a point-to-point channel, the IPsec name have to be written as DEV+equipment ID+name(DEV281250D52F2A1452.vpn1.com), and make sure both the client and server are inputing Client equipment ID. You can find H820's ID in the Status interface.



IPSec connect name   
you can input DEV+DeviceID[...] to bind device  
example:DEV281250D52F2A1452.vpn1.com

service mode

Mode

Remote IPSec gateway

Local IP address

VPN IP address

IP subnet mask

Remote IP address

VPN IP address

IP subnet mask

Key Exchange Method

Authentication

Pre-Shared Key

Perfect Forward Secrecy

NAT Traversal ☒

Advanced IKE Settings

Phase 1

Encryption

Integrity Algorithm

Select Diffie-Hellman Group for Key Exchange

Key Lifetime  Seconds

Phase 2

Encryption

Integrity Algorithm

Select Diffie-Hellman Group for Key Exchange

Key Lifetime  Seconds

## How to config CISCO 7200 as VPN Server

crypto keyring jordan

pre-shared-key hostname jordan key test

crypto isakmp profile jordan

description china SZ shenzhen

keyring jordan

match identity host jordan

keepalive 60 retry 10

crypto ipsec transform-set vpnset esp-des esp-sha-hmac

crypto ipsec profile jordan

set transform-set vpnset

set isakmp-profile jordan

```

crypto dynamic-map jordan 1
set security-association lifetime kilobytes 536870912
set security-association lifetime seconds 43200
set transform-set vpnset
set isakmp-profile jordan
reverse-route
crypto map COREVPN 26 ipsec-isakmp dynamic jordan

```

### 3.3.7.2 PPTP

[open all](#) | [close all](#)

3G Router

- Operation Mode
- Internet Settings
  - WAN
  - LAN
  - DHCP clients
  - VPN Passthrough
  - Advanced Routing
  - VPN**
  - DTU
  - SMS/Voice Command
  - Status Report
  - Route Fail Over
- Wireless Settings
- Firewall
- Administration

## PPTP

### PPTP VPN Settings

PPTP VPN Active	<input checked="" type="checkbox"/>
PPTP User	<input type="text" value="vpntest"/>
PPTP Password	<input type="password" value="••••••"/>
PPTP Server	<input type="text" value="vpntest"/>
Remote Lan/Mask	<input type="text" value="10.0.0.0"/> / <input type="text" value="255.255.255.0"/>
Local PPTP IP	<input type="text" value="DHCP II"/>
MPPE Encryption	<input checked="" type="checkbox"/>
40 Bit Encryption(Default is 128 Bit)	<input type="checkbox"/>
Refuse Stateless Encryption	<input checked="" type="checkbox"/>

Apply

PPTP feature works as Client only.

### 3.3.7.3 L2TP

## L2TP

### L2TP VPN Settings

L2TP VPN Active	<input type="checkbox"/>
L2TP User	<input type="text" value=""/>
L2TP Password	<input type="password" value=""/>
L2TP Server	<input type="text" value=""/>
Remote Lan/Mask	<input type="text" value=""/> / <input type="text" value=""/>
Local PPTP IP	<input type="text" value="dhcp"/>
MPPE Encryption	<input type="checkbox"/>

L2TP feature works as Client only.

### 3.3.7.4 Tunnel

#### Tunnel Feature

The H820 Tunnel feature supports two GRE.

##### GRE1

GRE VPN Settings	
GRE VPN Active	<input type="checkbox"/>
Remote Address *	<input type="text"/>
Local Address	<input type="text"/>
Local lan gateway *	<input type="text"/>
Remote Lan/Mask *	<input type="text"/> / <input type="text"/>

##### GRE2

GRE VPN Settings	
GRE VPN Active	<input type="checkbox"/>
Remote Address *	<input type="text"/>
Local Address	<input type="text"/>
Local lan gateway *	<input type="text"/>
Remote Lan/Mask *	<input type="text"/> / <input type="text"/>

#### IP Tunnel Feature

##### IP Tunnel

IP Tunnel Settings	
IP Tunnel Active	<input type="checkbox"/>
Remote Address *	<input type="text"/>
Local Address	<input type="text"/>
Local lan gateway *	<input type="text"/>
Remote Lan/Mask *	<input type="text"/> / <input type="text"/>

### 3.3.8 DTU Settings (Serial to Cellular Gateway Feature)

Notes: this feature is for H820 with DTU option only.

DTU Status	
dtu status	on ▼
DTU Serial setting	
serial baudrate	9600 ▼ bps
serial parity	none ▼
serial databits	8 ▼ bits
serial stopbits	1 ▼ bits
serial flow control	none ▼
DTU config	
mode	client ▼
Protocol	tcp ▼
server 1	<input checked="" type="checkbox"/> 113.111.127.22 : 5000
server 2	<input type="checkbox"/> 192.168.8.101 : 5000
server 3	<input type="checkbox"/> 192.168.8.102 : 5000
server 4	<input type="checkbox"/> 192.168.8.103 : 5000
Send heart beat	on ▼
heart beat interval time (units)	5
heart beat information	hex <input type="checkbox"/> DTU_heart
send delay time(unit:ms)	200
Add id string to head	<input type="checkbox"/> ID_0001 <input type="checkbox"/> add to heartbeat info

This section is mainly about DTU settings.

- **DTU status:** open and close DTU

#### DTU Serial setting

- **serial baudrate:** support 300/1200/2400/4800/9600/19200/38400/57600/115200bps
- **serial parity:** support none/odd/even
- **serial databits:** support 7 bits and 8 bits
- **serial stopbit:** support 1 bits and 2 bits
- **serial flow control:** support hardware/software

#### DTU config

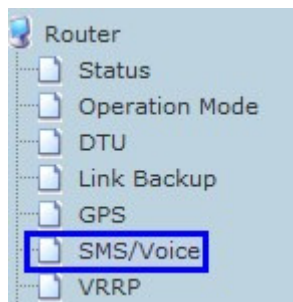
- **mode:** can configure as client or server.
- **Protocol:** support TCP/UDP
- **server 1~server 4:** fill in the centre server IP or Domain name and port. If you configure one server, the data will transfer to this server. If you configure one more servers, the data will transfer to all the servers at the same time.
- **Send heart beat:** open or close heart beat.
- **heart beat interval time:** set interval time to send each heart beat
- **heart beat information:** define the content of heart beat
- **send delay time:** send waiting time to send data.
- **Add id string to head:** add an ID string in the data or heartbeat.

### 3.3.9 SMS/Voice Control

Notes: this feature is for H820 with SMS/Voice option only.

#### 3.3.9.1 SMS

Step 1) click “SMS/Voice”



Step 2) Activate the SMS feature

### SMS/Voice Settings

SMS/Voice Command Settings

Message/Voice status

on

telephone number

number 1	<div>13798257916</div>	<input checked="" type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 2	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 3	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 4	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 5	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 6	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 7	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 8	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 9	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM
number 10	<div></div>	<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE	<input type="checkbox"/> ALARM

**Message/Voice status:** select “on” to enable SMS feature. “off” to disable SMS feature.

**Telephone number:** Sender’s phone number input. Totally can input 10 groups.

**Number 1.....10:** input the dedicated sender’s phone number. Do not forget to Tick “SMS”

Step 3) Define the SMS command

SMS	
SMS Command	on ▼
Send ack SMS	on ▼
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

**SMS Command:** select “on” to enable it. “off” to disable it.

**Send ack SMS:** If select “on”, the router will send command feedback to sender’s phone number. If select “off”, the router will not send command feedback to sender’s phone number.

**Reboot Router Command:** input the command for “reboot” operation, default is “reboot”.

**Get Cell Status Command:** input the command for “router cell status checking” operation, default is “cellstatus”. For example, if we send “cellstatus” to router, router will feedback the status to sender such as “Router SN: 086412090002 cell\_link\_up”, which indicated the router SN number and Cell Working Status.

**Cell link-up Command:** input the command for “router cell link up” operation, default is “cellup”. If router gets this command, the Router Cell will be online.

**Cell link-down Command:** input the command for “router cell link down” operation, default is “celldown”. If router gets this command, the Router Cell will be offline.


**DIO\_0 Set Command:** input the command for I/O port 0. For SMS feature, please keep the parameter default.

**DIO\_0 Reset Command:** input the command for I/O port 0. For SMS feature, please keep the parameter default.

**DIO\_1 Set Command:** input the command for I/O port 1. For SMS feature, please keep the parameter default.

**DIO\_1 Reset Command:** input the command for I/O port 1. For SMS feature, please keep the parameter default.

**DIO Status Command:** input the command for I/O port status. For SMS feature, please keep the parameter default.

Step 4) Click  button to save

#### Note:

- 1) SIM Card inserted in the router must support SMS or Voice.
- 2) Try to add zone code or country code if the command cannot get working.

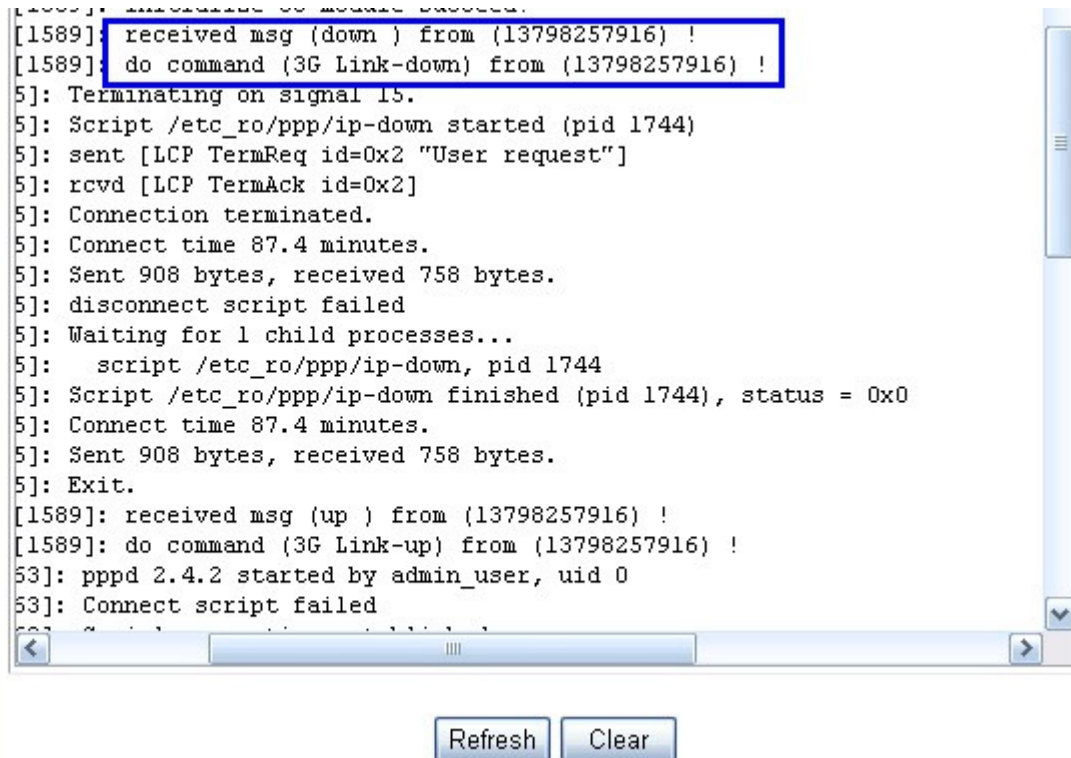
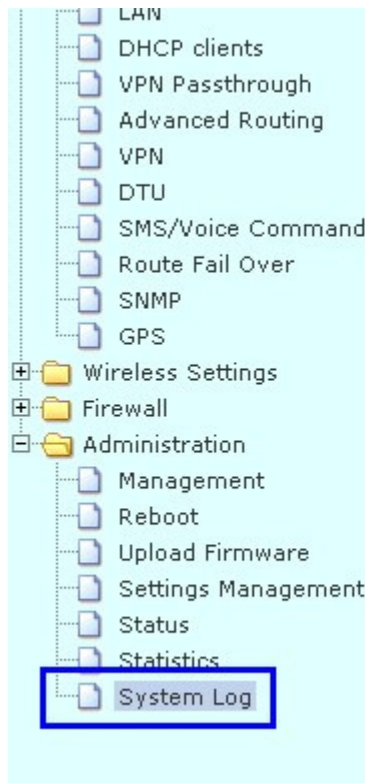
For example, we set the number 13798257916, and if the command cannot work, please try to put the country code 86 as followed picture.

Telephone Numbers	
Number 1	+8613798257916 <input checked="" type="checkbox"/> SMS

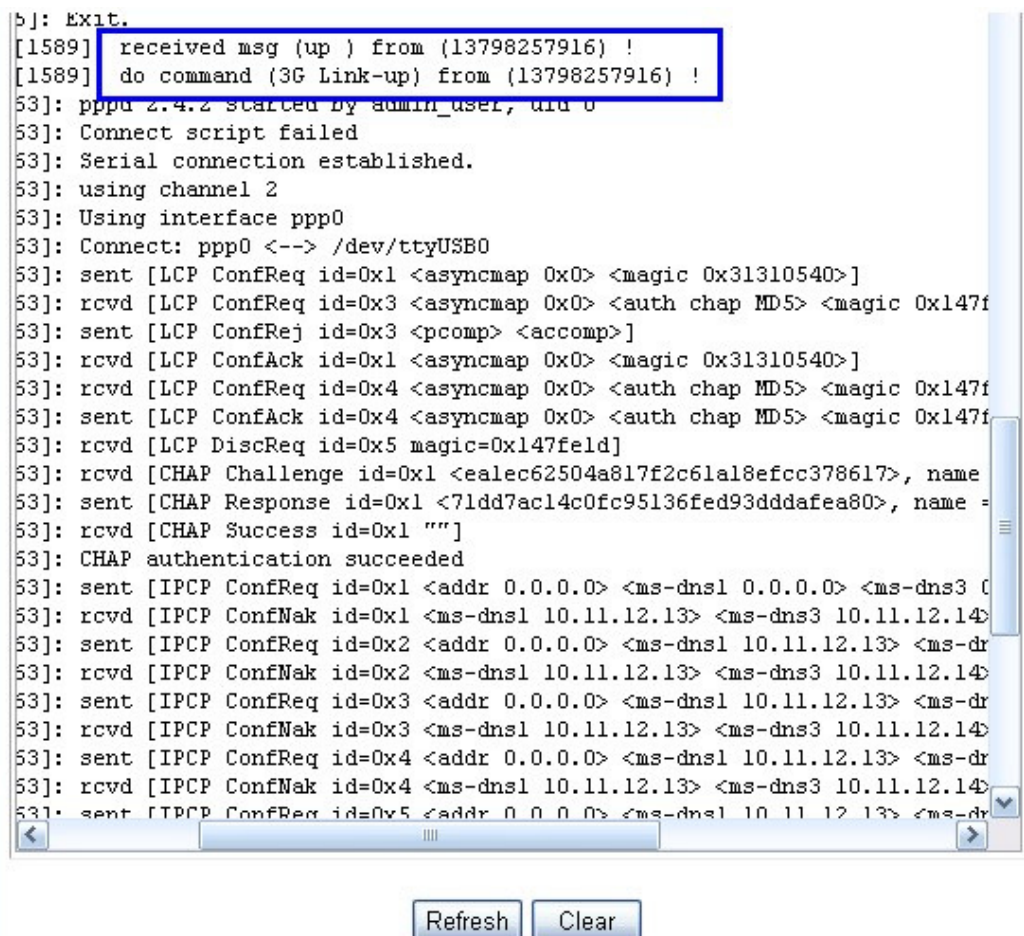
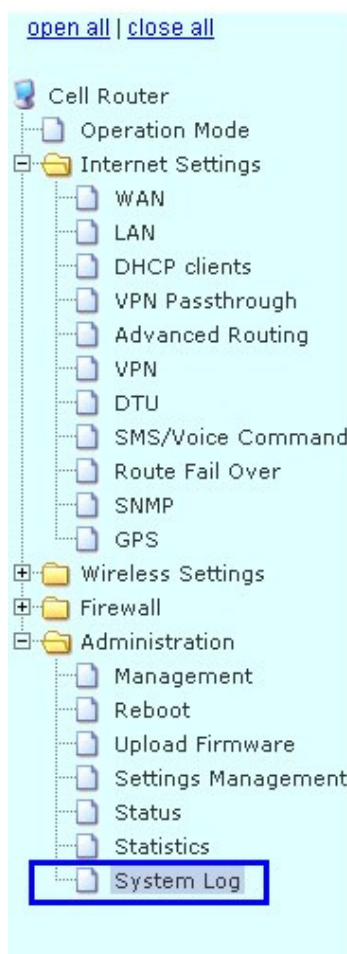
**Here set an example, we set the parameters for SMS/Voice as above.**

- 1) Use the cell phone 13798257916 to send “down” to the router’s SIM Card Number, the router will receive the “down” command, and it will be off-line. And in the System Log, we shall find a info as following marks.





- 2) Use the cell phone 13798257916 to send “up” to the router’s SIM Card Number, the router will receive the “up” command, and it will be online. And in the System Log, we shall find a info as following marks.



### 3.3.9.2 Voice

Notes: This feature may not work due to network compatibility or module modem.

#### Step 1) enable voice feature

SMS/Voice Command Settings	
Message/Voice status	on ▼

#### Step 2) set the dedicated phone number for voice control

telephone number		
number 1	13798257916	<input type="checkbox"/> SMS <input checked="" type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 2		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 3		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 4		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 5		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 6		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 7		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 8		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 9		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 10		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM

#### Step 3) Configure the voice command

Voice Command	
voice command	off ▼
SMS Alarm	off
SMS Alarm	Cell link up
SMS Alarm	Cell link down
SMS Alarm	Cell link up and down

- **off:** disable the voice control
- **Cell link up:** with this selection, the voice control can only control the Router Cell online.
- **Cell link down:** with this selection, the voice control can only control the Router Cell offline.
- **Cell link up and down:** with this selection, the voice control can control the Router Cell offline and online. 1<sup>st</sup> control to be online, 2<sup>nd</sup> control to be offline.

### 3.3.9.3 Alarm via SMS

With this feature, the Router will send SMS to pre-defined phone number for warning and alarm.

#### Step 1) enable Alarm feature



SMS/Voice Command Settings	
Message/Voice status	on ▼

Step 2) set the dedicated phone number for SMS Alarm

telephone number		
number 1	13798257916	<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input checked="" type="checkbox"/> ALARM
number 2		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 3		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 4		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 5		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 6		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 7		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 8		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 9		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 10		<input type="checkbox"/> SMS <input type="checkbox"/> VOICE <input type="checkbox"/> ALARM

Step 3) Configure the voice command

SMS Alarm	
SMS Alarm	on ▼
Low Signal Alarm (Check Interval:20s)	<input checked="" type="checkbox"/>
when equal and lower level(0~2)	0
check count for alarm	10
normal signal count for check again	8

apply

**normal signal count for check again:** to prevent repeating alarm.

With the setting above, the H820 router checks signal every 20s, if all of 10 times with signal 0 quality, H820 Router will send Alarm via SMS. After the alarm, this feature will be locked, but H820 Router keeps checking signal quality every 20s, if continuous 8 times are with signal quality better than 0, the alarm feature will be unlocked, then the alarm feature starts work again.

### 3.3.10 Link Backup (Route Redundancy)

Operation Mode			
Active	<input checked="" type="checkbox"/>		
Back To Higher Primary When Possible	<input checked="" type="checkbox"/>		
Link Priority Settings			
WAN1: Cellular Wireless	<input type="checkbox"/> OFF <input checked="" type="radio"/> High Priority <input type="radio"/> Middle Priority <input type="radio"/> Low Priority		
WAN2: Wifi DHCP Wireless	<input type="checkbox"/> OFF <input type="radio"/> High Priority <input type="radio"/> Middle Priority <input checked="" type="radio"/> Low Priority		
WAN3 : Wired <span>PPPOE</span>	<input type="checkbox"/> OFF <input type="radio"/> High Priority <input checked="" type="radio"/> Middle Priority <input type="radio"/> Low Priority		
Link Check Settings			
Check Count	3 (1-20)		
Check Interval Time(min)	2 (1-60)		
Used The Same Method	YES		
All WAN Check Method	ping ip	220.181.111.168	110.11.233.8

## Operation Mode

- **Active:** disable or enable the link redundancy
- **Back to Higher Primary When Possible:**

If you tick this option, once the H820 Router work on backup link, whether it fails or not, it will return to main link if main link turns to be okay.

If not tick this option, the H820 Router will not return to main link until the current link fails.

## Link Priority Settings

- **WAN1: Cellular Wireless**
- **WAN2: WiFi DHCP Wireless**
- **WAN3: Wired XXX (XXX=DHCP, STATIC, PPPOE)**

**OFF:** Check *OFF Blank* to disable or uncheck to enable the link redundancy

**Priority:** High Priority, Middle Priority, Low Priority.

## Link Check Settings

- **Check Count:** for example, set it as 3. Router check link live 3 times.
- **Check Interval Time(min):** for example, set is as 2. Router check link live every 2 minutes.
- **Used The Same Method:**

If set it as **YES**, WAN1/WAN2/WAN3 use same check IP or domain name from *ALL WAN Check Method*.

All WAN Check Method	ping ip	220.181.111.168	110.11.233.8
----------------------	---------	-----------------	--------------

If set is as **NO**, users need set WAN1/WAN2/WAN3 live check IP or domain name separately.

Used The Same Method	NO		
WAN1 Check method	ping ip	google.com	118.113.114.2
WAN2 Check method	ping ip	163.com	222.113.114.28
WAN3 Check method	ping ip	8.8.8.8	112.113.114.222

- **All WAN Check Method:** define the link live check IP or domain name.

How to use *Link Backup* feature? Here set an example as follows,  
H820 WAN RJ45 connects to upper side router LAN RJ45.

Confirm the upper side router connects to internet, and its DHCP is working.  
First, Set H820 work mode as default “Gateway mode”.

open all | close all

Router

- Status
- Operation Mode**
- DTU
- Link Backup
- GPS
- SMS/Voice
- VRRP
- Internet Settings
  - WAN
  - LAN
  - DHCP clients
  - VPN Passthrough
  - Static Routing
  - Dynamic Routing
  - Dynamic Routing List
  - QoS
  - SNMP
  - Cell ICMP Check
  - Lo Interface
- VPN
- WiFi

### Operation Mode Configuration

You may configure the operation mode suitable for you environment.

☐ Bridge:  
All ethernet and wireless interfaces are bridged into a single bridge interface.

☒ **Gateway:**  
The first ethernet port is treated as WAN port. The other ethernet ports interface are bridged together and are treated as LAN ports.

☐ AP Client:  
The wireless apcli interface is treated as WAN port, and the wireless ethernet ports are LAN ports.

Ethernet wan port as wan in AP Client Mode: ☒

NAT Enabled:

TCP Timeout:

UDP Timeout:

**Step 1)** activate it. Tick “Active”

**Step 2)** click at “Back To Higher Primary When Possible”

**Step 3)** Choose the network priority.

A. Cellular as Low Priority, DHCP as High Priority

With this configuration, the router will work at DHCP mainly, and if DHCP is failed, it switches to cellular automatically after some time. And it will automatically switch to DHCP when DHCP is fixed.

Operation Mode			
Active	<input checked="" type="checkbox"/>		
Back To Higher Primary When Possible	<input checked="" type="checkbox"/>		
Link Priority Settings			
WAN1: Cellular Wireless	<input type="checkbox"/> OFF <input type="radio"/> High Priority <input type="radio"/> Middle Priority <input checked="" type="radio"/> Low Priority		
WAN2: Wifi DHCP Wireless	<input checked="" type="checkbox"/> OFF <input type="radio"/> High Priority <input checked="" type="radio"/> Middle Priority <input type="radio"/> Low Priority		
WAN3 : Wired <span style="border: 1px solid black; padding: 0 5px;">DHCP</span>	<input type="checkbox"/> OFF <input checked="" type="radio"/> High Priority <input type="radio"/> Middle Priority <input type="radio"/> Low Priority		
Link Check Settings			
Check Count	<input type="text" value="3"/> (1-20)		
Check Interval Time(min)	<input type="text" value="2"/> (1-60)		
Used The Same Method	<span>YES</span> ▼		
All WAN Check Method	<span>ping ip</span> ▼	<input type="text" value="118.113.114.2"/>	<input type="text" value="118.113.114.2"/>

Apply

#### B. Cellular as High Priority, DHCP as Low Priority

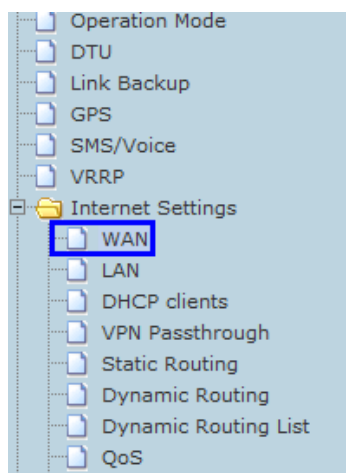
With this configuration, the router will work at cellular mainly, and if cellular is failed, it switches to DHCP automatically after some time. And it will automatically switch to cellular when cellular is fixed.

Operation Mode			
Active	<input checked="" type="checkbox"/>		
Back To Higher Primary When Possible	<input checked="" type="checkbox"/>		
Link Priority Settings			
WAN1: Cellular Wireless	<input type="checkbox"/> OFF <input checked="" type="radio"/> High Priority <input type="radio"/> Middle Priority <input type="radio"/> Low Priority		
WAN2: Wifi DHCP Wireless	<input checked="" type="checkbox"/> OFF <input type="radio"/> High Priority <input checked="" type="radio"/> Middle Priority <input type="radio"/> Low Priority		
WAN3 : Wired <span style="border: 1px solid black; padding: 0 5px;">DHCP</span>	<input type="checkbox"/> OFF <input type="radio"/> High Priority <input type="radio"/> Middle Priority <input checked="" type="radio"/> Low Priority		
Link Check Settings			
Check Count	<input type="text" value="3"/> (1-20)		
Check Interval Time(min)	<input type="text" value="2"/> (1-60)		
Used The Same Method	<span>YES</span> ▼		
All WAN Check Method	<span>ping ip</span> ▼	<input type="text" value="118.113.114.2"/>	<input type="text" value="118.113.114.2"/>

Apply

DHCP: here can be DHCP WiFi Client.

**Step 4)** if Step 3 choose A, please set WAN as *DHCP* and click “Apply”



WAN Connection Type: DHCP (Auto config)

**DHCP Mode**

Hostname (optional)

**MAC Clone**

Enabled Disable

Apply
Cancel

The H820 gets WAN IP and default gateway from the up-side router.

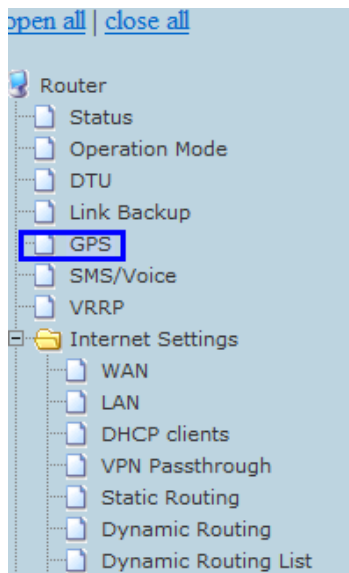
Product Model	3G Router
Software Version	2.4.6 (Aug 5 2011)
Hardware Version	1.0.0
Device ID	280230312C080435
System Up Time	36 mins, 15 secs
Operation Mode	Gateway Mode
<b>3G Info</b>	
Signal Strength	27 , (0-31)
Attachment State	CDMA/EVDO HYBRID
<b>Local Network</b>	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:77
<b>Internet Configurations</b>	
Connected Type	DHCP
WAN IP Address	192.168.0.104
Subnet Mask	255.255.255.0
Default Gateway	192.168.0.1
Primary Domain Name Server	192.168.0.1
Secondary Domain Name Server	
MAC Address	00:0C:43:30:32:12

If Step 3 choose B, set WAN as *CELL NETWORK* and click “Apply”, it will work on cellular first, and switch to LAN RJ45 cable WAN or WiFi client mode if cellular network is failed.

Notes: for route fail over feature, please first make the main network and backup network both work before activate the fail over feature.

### 3.3.11 GPS

Notes: GPS feature is for H820 router with GPS option only.



## GPS

GPS Settings	
GPS Active	<input checked="" type="checkbox"/>
GPS Send to	TCP/IP ▼
GPS to Net Settings	
socktype	tcp ▼
server	112.12.33.88
server port	6000

### ➤ WAN Connection Type

- **GPS Active:** please click it once you need use GPS feature.
- **GPS Send to:** Choose “Serial” or “TCP/IP” method. The router only receives the GPS signal, will not process it. It will just send the received GPS signal to your GPS processor.  
If the GPS processor is connected to the 3G Router via Serial Port, then please choose “Serial”.

If choose “TCP/IP” method, please configure the *GPS to NET Settings*.

If choose “Serial” method, please configure the *GPS to Serial Settings*.

### ➤ GPS to NET Settings

- **Sock type:** tcp or udp
- **Server:** fill in the correct destination server IP or domain name
- **Server port:** fill in the correct destination server port

GPS Settings	
GPS Active	<input checked="" type="checkbox"/>
GPS Send to	TCP/IP ▼
GPS to Net Settings	
socktype	tcp ▼
server	112.12.33.88
server port	6000

### ➤ GPS to Serial Settings

- **serial baudrate:** 9600/19200/38400/57600/115200bps for choice
- **serial parity:** none/odd/even for choice
- **serial databits:** 7/8 for choice
- **serial stopbits:** 1/2 for choice
- **serial flow control:** none/hardware/software for choice

GPS Settings	
GPS Active	<input checked="" type="checkbox"/>
GPS Send to	Serial ▼
GPS to Serial Settings	
serial baudrate	115200 ▼ bps
serial parity	none ▼
serial databits	8 ▼ bits
serial stopbits	1 ▼ bits
serial flow control	none ▼
Comment: Do not used gps with dtu when send to serial!	

## 3.3.12 WiFi Wireless Settings

Notes: WiFi Feature is H820 with WiFi only

### 3.3.12.1 Basic Wireless Settings

Wireless Network	
Radio On/Off	<input type="button" value="RADIO OFF"/>
WiFi On/Off	<input type="button" value="WiFi OFF"/>
Network Mode	11b/g/n mixed mode ▼
Network Name(SSID)	Cell_AP_120901D4 Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID1	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID2	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID3	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID4	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID5	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID6	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Multiple SSID7	<input type="text"/> Hidden <input type="checkbox"/> Isolated <input type="checkbox"/>
Broadcast Network Name (SSID)	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
AP Isolation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
MBSSID AP Isolation	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
BSSID	08:66:01:00:04:A2
Frequency (Channel)	2412MHz (Channel 1) ▼



HT Physical Mode	
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel BandWidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
Guard Interval	<input type="radio"/> Long <input checked="" type="radio"/> Auto
MCS	Auto ▼
Reverse Direction Grant(RDG)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extension Channel	2432MHz (Channel 5) ▼
Space Time Block Coding(STBC)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Aggregation MSDU(A-MSDU)	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
Auto Block ACK	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Decline BA Request	<input checked="" type="radio"/> Disable <input type="radio"/> Enable
HT Disallow TKIP	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

Other	
HT TxStream	1 ▼
HT RxStream	1 ▼

Apply
Cancel

#### ➤ Wireless Network

- **Radio On/Off:** If it indicates *RADIO OFF*, it means the radio is on. You can click *RADIO OFF* to disable it. If it indicates *RADIO ON*, it means the radio is off. You can click *RADIO ON* to enable it.
- **WiFi On/Off:** If it indicates *WiFi OFF*, it means the radio is on. You can click *WiFi OFF* to disable it. If it indicates *WiFi ON*, it means the radio is off. You can click *WiFi ON* to enable it. If WiFi is ON, the WiFi LED will be light on. If WiFi is OFF, the WiFi LED will be off.
- **Network Mode:** 802.11b/g/n mode selection
- **Network Name(SSID):** Input the SSID, *Hidden* & *Isolated* for option. If tick *Hidden*, the WiFi SSID will not broadcast.
- **Multiple SSID1:** H820 Router supports multiple SSID 8 groups totally.
- **Broadcast Network Name (SSID):** Enable or Disable SSID broadcast.
- **BSSID:** indicates the MAC of WiFi
- **Frequency (Channel):** current working frequency and channel.

### 3.3.12.2 WiFi Advanced Settings

Advanced Wireless	
BG Protection Mode	Auto ▼
Beacon Interval	100 ms (range 20 - 999, default 100)
Data Beacon Rate (DTIM)	1 ms (range 1 - 255, default 1)
Fragment Threshold	2346 (range 256 - 2346, default 2346)
RTS Threshold	2347 (range 1 - 2347, default 2347)
TX Power	100 (range 1 - 100, default 100)
Short Preamble	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Short Slot	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Tx Burst	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Pkt_Aggregate	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
IEEE 802.11H Support	<input type="radio"/> Enable <input checked="" type="radio"/> Disable (only in A band)
Country Code	None ▼

Wi-Fi Multimedia	
WMM Capable	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
APSD Capable	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
DLS Capable	<input type="radio"/> Enable <input checked="" type="radio"/> Disable
WMM Parameters	WMM Configuration

### 3.3.12.3 Wireless Security/Encryption Settings

Select SSID	
SSID choice	Cell AP 120901D4 ▼

"Cell AP 120901D4"	
Security Mode	Disable ▼

Access Policy	
Policy	Disable ▼
Add a station Mac:	<input type="text"/>

- **SSID choice:** select the SSID you want to configure
- **Security Mode:** include Disable, OPENWEB, SHAREDWEB, WEBAUTO, WPA, WPA-PSK, WPA2, WPA2-PSK, wpa-psk/wpa2-psk, wpa1/wpa2, 802.1X.
- **Access policy:** setting the MAC list for access or deny.  
**Disable:** close the *Access Policy*.  
**Allow:** allow the assigned MAC enable to use WiFi  
**Reject:** refuse the assigned MAC enable to use WiFi

### 3.3.12.4 WDS

Wireless Distribution System(WDS)	
WDS Mode	Disable ▾
<div>Apply</div> <div>Cancel</div>	

Wireless Distribution System(WDS)	
WDS Mode	Disable ▾
<div>Apply</div> <div>Cancel</div>	
<div>Disable</div> <div>Lazy Mode</div> <div>Bridge Mode</div> <div>Repeater Mode</div>	

### 3.3.12.5 WPS

WPS Config	
WPS:	Disable ▾
<div>Apply</div>	

WPS Config	
WPS:	Enable ▾
<div>Apply</div>	

### 3.3.12.6 Station List

Wireless Network							
MAC Address	Aid	PSM	MimoPS	MCS	BW	SGI	STBC

## 3.3.12.7 Statistics

Transmit Statistics	
Tx Success	9
Tx Retry Count	0, PER=0.0%
Tx Fail after retry	0, PLR=0.0e+00
RTS Successfully Receive CTS	0
RTS Fail To Receive CTS	0
Receive Statistics	
Frames Received Successfully	42309
Frames Received With CRC Error	39890, PER=48.5%
SNR	
SNR	n/a, n/a, n/a

Reset Counters

## 3.3.13 Firewall

### 3.3.13.1 MAC/IP/Port Filter Settings

Basic Settings	
MAC/IP/Port Filtering	Disable ▾
Default Policy -- The packet that don't match with any rules would be:	Dropped. ▾

Apply

Reset

MAC/IP/Port Filter Settings	
Source MAC address	<input type="text"/>
Dest IP Address	<input type="text"/>
Source IP Address	<input type="text"/>
Protocol	None ▾
Dest Port Range	<input type="text"/> - <input type="text"/>
Source Port Range	<input type="text"/> - <input type="text"/>
Action	Accept ▾
Comment	<input type="text"/>

(The maximum rule count is 32.)

Apply

Reset

Current MAC/IP/Port filtering rules in system:									
No.	Source MAC address	Dest IP Address	Source IP Address	Protocol	Dest Port Range	Source Port Range	Action	Comment	Pkt Cnt
Others would be dropped									-

This section is mainly about MAC/IP/Port filter settings

- **Basic Settings**
  - **MAC/IP/Port Filtering:** Disable or Enable
  - **Default Policy -- The packet that don't match with any rules would be:** Dropped/Accepted
- **MAC/IP/Port Filter Settings**
  - **Source MAC address:** Fill the MAC address which needs to filter.
  - **Dest IP Address:** IP of the target destination computer( the computer which the data packet will be sent to)
  - **Destination Port Range:** port range of target computer
  - **Source Port Range:** port range of the computer which sends data
  - **Action:** choose *Accept* or *Drop*
  - **Comment:** input comment here
- **Current MAC/IP/Port filtering rules in system**

It display the configured rules in this table.

### 3.3.13.2 Port Forwarding (Virtual Server Settings)

#### Virtual Server Settings

You may setup Virtual Servers to provide services on Internet.

Port Forwarding	
Port Forwarding	Disable ▾
IP Address	<input type="text"/> : <input type="text"/>
Port Range	<input type="text"/> - <input type="text"/>
Protocol	TCP&UDP ▾
Interface	WAN ▾
Comment	<input type="text"/>

(The maximum rule count is 32.)

Current Port Forwarding in system:					
No.	IP Address	Port Range	Protocol	Interface	Comment

Port forwarding is the process that your router or firewall uses to sort the right kind of network data to the right port. Computers and routers use ports as a way to organize network data. Different types of data, such as web sites, file downloads, and online games, are each assigned a port number. By using port forwarding, the router or firewall sends the correct data to the correct place.

- Virtual Server Settings: open and close Settings.
- IP address: fill the IP address of forwarding. The first blank is for local IP address, the second blank is for port.
- Port Range: fill the Port of forwarding.

### 3.3.13.3 DMZ Host

#### DMZ Settings

You may setup a De-militarized Zone(DMZ) to separate internal network and Internet.

DMZ Settings	
DMZ Settings	Disable ▼
DMZ IP Address	<input type="text"/>
Except TCP port	<input type="checkbox"/>

In computer networking, DMZ is a firewall configuration for securing local area networks (LANs).

- **DMZ Settings:** open and close DMZ feature.  
Disable: close DMZ feature  
Enable: enable the DMZ feature for assigned IP  
Enable Super DMZ: enable the DMZ feature for assigned MAC
- **DMZ IP Address:** Please Enter the IP address of the computer which you want to set as DMZ host
- **DMZ MAC Address:** Please Enter the MAC address of the computer which you want to set as DMZ host
- **Except TCP port:** disable or enable for TCP port

**Note:** When DMZ host is settled, the computer is completely exposed to the external network; the firewall will not influence this host.

### 3.3.13.4 System Security

Remote management	
Remote management (via WAN)	Allow ▾

Ping from WAN Filter	
Ping from WAN Filter	Disable ▾

Block Port Scan	
Block port scan	Disable ▾

Block SYN Flood	
Block SYN Flood	Disable ▾

Stateful Packet Inspection (SPI)	
SPI Firewall	Disable ▾

Include *Remote management*, *Ping from WAN Filter*, *Block Port Scan*, *Block SYN Flood* and *SPI Firewall* (Stateful Packet Inspection).

### 3.3.13.5 Content Filter Settings

You can setup Content Filter to restrict the improper content access, including Webs Content Settings, URL filter and Host Filter.

#### ➤ Proxy/Java/Activex Filter

**Content Filter Settings**

---

You can setup Content Filter to restrict the improper content access.

Webs Content Filter	
Filters:	<input type="checkbox"/> Proxy <input type="checkbox"/> Java <input type="checkbox"/> ActiveX

Support Proxy, Java, ActiveX filter.

#### ➤ Web URL Filter



## Webs URL Filter Settings

Add a URL filter:	
URL:	<input type="text"/>
<input type="button" value="Add"/> <input type="button" value="Reset"/>	
Current Webs URL Filters:	
No	URL
<input type="button" value="Delete"/> <input type="button" value="Reset"/>	

Fill in the URL for filter.

### ➤ Web Host Filter

## Webs Host Filter Settings

Add a Host(keyword) Filter:	
Keyword	<input type="text"/>
<input type="button" value="Add"/> <input type="button" value="Reset"/>	
Current Website Host Filters:	
No	Host(Keyword)
<input type="button" value="Delete"/> <input type="button" value="Reset"/>	

## 3.3.14 Administration

### 3.3.14.1 Management

#### ➤ Language Settings

Language Settings	
Select Language	English ▼

Select Web display language. Default is English. Can OEM other languages.

#### ➤ Administrator Settings

Administrator Settings	
Account	pptp_user
Password	••••••••••

Select Web display language. Default is English. Can OEM other languages.

### ➤ WatchDog

WatchDog	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
----------	---

### ➤ Web Management Port Settings

Web Management Port Settings	
TCP Port	80
Note	Reboot automatically once click apply

Default port is 80, sometimes if the carrier/ISP block 80 port for remote incoming, can try to modify it to port 10000.

### ➤ NTP Settings

NTP Settings	
Current Time	Sat Jan 1 00:27:27 UTC 2000 <input type="button" value="Sync with host"/>
Time Zone:	(GMT-11:00) Midway Island, Samoa ▼
NTP Server	<input type="text"/> ex: time.nist.gov ntp0.broad.mit.edu time.stdtime.gov.tw
NTP synchronization(hours)	<input type="text"/>

### ➤ DDNS Settings

DDNS Settings	
Dynamic DNS Provider	None ▼
Account	pptp_user
Password	••••••••••
DDNS	<input type="text"/>

- **Dynamic DNS Provider:** choose the right DNS server provider. Supported server list.

Dyndns.org  
 freedns.afraid.org  
 www.zoneedit.com  
 www.no-ip.com  
 www.3322.org  
 www.ez-ip.net  
 www.justlinux.com  
 www.dhs.org  
 www.ods.org  
 gnudip.cheapnet.net  
 www.dyn.ca  
 www.tzo.com  
 www.easydns.com  
 www.dyns.cx  
 www.hn.org

- **Account:** fill in account info.
- **Password:** fill in password info.
- **DDNS:** fill in DDNS info.

**Example:**

DDNS Settings	
Dynamic DNS Provider	Dyndns.org ▼
Account	szelins
Password	●●●●●●●●
DDNS	szelins.dyndns.org

### 3.3.14.1.1 Router web port

Web Management Port Settings	
TCP Port	80
Note	Reboot automatically once click apply

Please input the web port of the router. Normally we use 80 or 10000.  
 Please re-power the router after changing the port number.

### 3.3.14.1.2 Language, password and NTP settings

Language Settings	
Select Language	English ▼

Administrator Settings	
Account	pptp_user
Password	●●●●●●●●

NTP Settings	
Current Time	Sat Jan 1 00:27:27 UTC 2000 <input type="button" value="Sync with host"/>
Time Zone:	(GMT-11:00) Midway Island, Samoa ▼
NTP Server	<input type="text"/> ex: time.nist.gov ntp0.broad.mit.edu time.stdtime.gov.tw
NTP synchronization(hours)	<input type="text"/>

- Select Language
- Administrator Settings. The default both are admin.
- NTP Settings

### 3.3.14.1.3 DDNS settings

DDNS Settings	
Dynamic DNS Provider	None ▼
Account	pptp_user
Password	●●●●●●●●
DDNS	<input type="text"/>

- **Dynamic DNS Provider:** choose the right DNS server provider. Supported server list.

[Dyndns.org](#)  
[freedns.afraid.org](#)  
[www.zoneedit.com](#)  
[www.no-ip.com](#)  
[www.3322.org](#)  
[www.ez-ip.net](#)  
[www.justlinux.com](#)  
[www.dhs.org](#)  
[www.ods.org](#)  
[gnudip.cheapnet.net](#)  
[www.dyn.ca](#)  
[www.tzo.com](#)  
[www.easydns.com](#)  
[www.dyns.cx](#)  
[www.hn.org](#)

- **Account:** fill in account info.
- **Password:** fill in password info.
- **DDNS:** fill in DDNS info.

**Example:**

DDNS Settings	
Dynamic DNS Provider	Dyndns.org ▼
Account	szelins
Password	●●●●●●●●
DDNS	szelins.dyndns.org

### 3.3.14.2 Upload Firmware (Upgrade Firmware)

Update Firmware	
Location:	<input type="text"/> 浏览...

Upgrade the firmware to obtain new functionality. It takes about 2~5 minutes. Choose the correct firmware file, then click “Apply” button.

**Notes:** Highly recommend to “Load Default” the H820 Router after upload the firmware. “Load Default” will cause all the settings lost. Please backup/export the settings before “Load Default”. Or re-configure the H820 after “Load Default”

For some version of firmware, it requires uploading bootloader also. Please operate at the following picture. But most of time it no need do this step unless E-Lins guide or inform you to upload bootloader.

Update Bootloader	
Location:	<input type="text"/> 浏览...

### 3.3.14.3 Settings Management

Export Settings	
Export Button	<input type="button" value="Export"/>

Import Settings	
Settings file location	<input type="text"/> <input type="button" value="浏览..."/>
<input type="button" value="Import"/> <input type="button" value="Cancel"/>	

Load Factory Defaults	
Load Default Button	<input type="button" value="Load Default"/>

Here you can make a backup of current settings or restore previous settings of the router .

- **Export settings:** click 'export' to export configuration files and then select save path.
- **Import settings:** click 'browse', select previous backup configuration files and then click 'Import'. Then all the previous settings will be recovered.
- **Load Factory Defaults:** click 'Load Default' then all settings will be restored to factory settings. This is not recommended in order to avoid the loss of important parameter

### 3.3.14.4 System Command

Input related command at command area. Click "Apply" button to execute. The blank area will display infos.

System command

Command:

Apply Refresh

### 3.3.14.5 System Log

#### ➤ Remote System Log Settings

H820 Router support export the sys log into remote server.

Remote System Log Settings

Remote System Log Active	<input checked="" type="checkbox"/>	
server	192.168.8.100	:UDP: 514

apply

It requires sys log server tool.

Download link: [http://www.szelins.com/download/tool/SyslogWatcherSetup-4.2.0-win32\\_1.rar](http://www.szelins.com/download/tool/SyslogWatcherSetup-4.2.0-win32_1.rar)

#### ➤ Local System Log



## System Log

```
Jan 1 00:00:16 syslogd started: BusyBox v1.12.1
Jan 1 00:00:16 kernel: fuse init (API version 7.8)
Jan 1 00:00:16 kernel: io scheduler noop registered (default)
Jan 1 00:00:16 kernel: Ralink gpio driver initialized
Jan 1 00:00:16 kernel: i2cdrv_major = 218
Jan 1 00:00:16 kernel: HDLC line discipline: version $Revision: 1.1.1.1
Jan 1 00:00:16 kernel: N_HDLC line discipline registered.
Jan 1 00:00:16 kernel: Ralink APSoC Hardware Watchdog Timer
Jan 1 00:00:16 kernel: SoftDog: cannot register miscdev on minor=130 (e
Jan 1 00:00:16 kernel: Serial: 8250/16550 driver $Revision: 1.8 $ 2 por
Jan 1 00:00:16 kernel: serial8250: ttyS0 at I/O 0xb0000500 (irq = 37) i
Jan 1 00:00:16 kernel: serial8250: ttyS1 at I/O 0xb0000c00 (irq = 12) i
Jan 1 00:00:16 kernel: RAMDISK driver initiali
Jan 1 00:00:16 kernel: zed: 16 RAM disks of 16384K size 1024 blocksize
Jan 1 00:00:16 kernel: loop: loaded (max 8 devices)
Jan 1 00:00:16 kernel: rdm_major = 253
Jan 1 00:00:16 kernel: Ralink APSoC Ethernet Driver Initilization. v2.1
Jan 1 00:00:16 kernel: MAC_ADRH -- : 0x00000866
Jan 1 00:00:16 kernel: MAC_ADRL -- : 0x010007c1
Jan 1 00:00:16 kernel: PROC INIT OK!
Jan 1 00:00:16 kernel: IMQ starting with 2 devices...
Jan 1 00:00:16 kernel: IMQ driver loaded successfully.
Jan 1 00:00:16 kernel: Hooking IMQ before NAT on PREROUTING.
Jan 1 00:00:16 kernel: Hooking IMQ after NAT on POSTROUTING.
Jan 1 00:00:16 kernel: PPP generic driver version 2.4.2
Jan 1 00:00:16 kernel: PPP BSD Compression module registered
Jan 1 00:00:16 kernel: NET: Registered protocol family 24
```

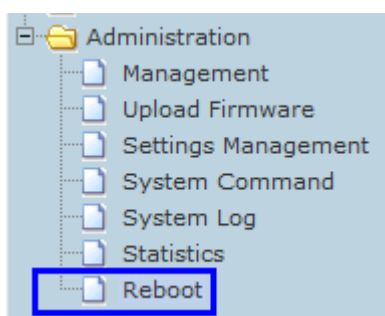
## 3.3.14.6 Statistics

Memory	
Memory total:	60684 kB
Memory left:	31960 kB
WAN/LAN	
WAN Rx packets:	0
WAN Rx bytes:	0
WAN Tx packets:	6
WAN Tx bytes:	492
LAN Rx packets:	6093
LAN Rx bytes:	400006
LAN Tx packets:	6120
LAN Tx bytes:	1107041

All interfaces	
Name	eth2
Rx Packet	6137
Rx Byte	513803
Tx Packet	6134
Tx Byte	1139410
Name	ra0
Rx Packet	117309
Rx Byte	32422543
Tx Packet	1443
Tx Byte	0
Name	eth2.1
Rx Packet	6127
Rx Byte	427889
Tx Packet	6127
Tx Byte	1132011
Name	eth2.2
Rx Packet	0
Rx Byte	0
Tx Packet	6
Tx Byte	492
Name	br0
Rx Packet	6128
Rx Byte	404417
Tx Packet	6158
Tx Byte	1130413
Name	ppp0
Rx Packet	10
Rx Byte	160
Tx Packet	9
Tx Byte	168

Display the statistics information of system flow.

### 3.3.14.7 Reboot



**Question:** Why to use Reboot Feature?

**Answer:** Router is similar a computer, whose performance depends on hardware and software. The Router's performance becomes weaker after very long time working. With reboot, it will refresh the performance.

**Question:** Is necessary to use the Reboot Feature?

**Answer:** Not really. Our router has high reliable and stable performance. It not requires using reboot feature compulsively. However, Reboot Feature will double ensure the router to be more stable and reliable.

**H820 Router support three types of Reboot Feature.**

➤ **Reboot AT Time Settings**

Reboot At Time Settings	
Reboot At Time	<input checked="" type="checkbox"/>
Time(h:m:s)	03 : 01 : 01
Note	Please start NTP in Management First!

Users can define the exact time to reboot for everyday.

➤ **Reboot AT Time Settings**

Reboot Timer Settings	
Reboot When Timeout	<input checked="" type="checkbox"/>
Timer(min)	86400

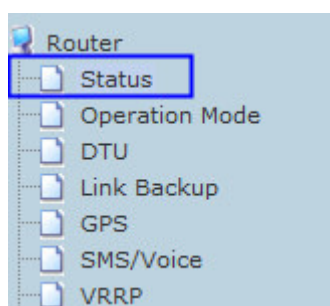
Users can set timer to reboot.


➤ **Reboot AT Time Settings**

Reboot System	
Reboot Now	<input type="button" value="Reboot"/>

Manually click "Reboot" button to reboot immediately.

### 3.3.14.8 Status



System Info	
Series	H820
SN	086412100296
Software Version	2.2.13 (Oct 20 2012)
Hardware Version	1.0.0
System Up Time	1:41
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	HUAWEI-EM820W
IMEI/ESN	355858040246813
Sim Status	SIM ready
Selected Network	AUTO
Registered Network	Registered on Home network: "46001",2
Sub Network Type	WCDMA
Signal	13 
Cell Status	UP
Internet Configurations	
Connected Type	CELL
WAN IP Address	172.17.194.232
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	08:66:01:00:07:C0
Local Network	
Local IP Address	192.168.8.1
Local Netmask	255.255.255.0
MAC Address	08:66:01:00:07:C1
IPSEC Status	
Name	Status
PPTP Status	
PPTP	down
L2TP Status	
L2TP	down

From this page you can see the Router's basic running state.

## ➤ Ethernet Port Status

### Ethernet Port Status

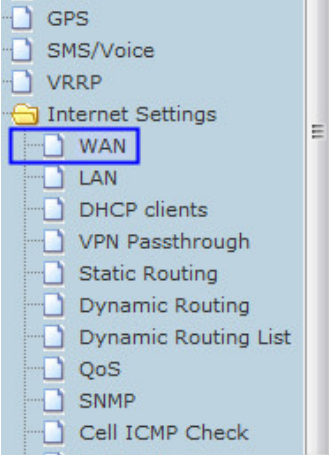


## ➤ System Info

- **Product Model:** indicates the model name
- **SN:** indicates the product SN
- **Software Version:** software version reveals the status of software update.
- **Hardware Version:** indicates the hardware version
- **System Up Time:** this time directly reveals router working hours
- **Operation Mode:** indicates the router working mode

## ➤ Cell Network Info

- **Cell Modem:** indicates inside cellular module modem name
- **IMEI/ESN:** indicates IMEI or ESN info of inside cellular module modem
- **Sim Status:** indicates sim card status
- **Selected Network:** indicates the selected working network



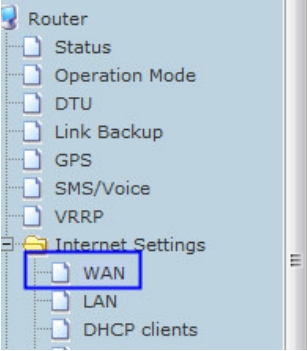
The screenshot shows the 'Internet Settings' menu on the left, with 'WAN' highlighted. The main panel displays the 'WAN Connection Type' as 'Cell Network'. Below this, the 'Cell Mode' section shows the following configuration:

Cell Mode	
Cell Modem	HUAWEI-EM820W
Modem Description	HUAWEI WCDMA 3G modem
Network Type	AUTO
Online Mode	Keep Alive
Parameter Groups	WCDMA [View] [Delete]
[Advance Parameter Groups]	
[Advance Cell Options]	

- **Registered Network:** indicates the current working network carrier ID
- **Sub Network Type:** indicates the current working network type
- **Signal:** reveals the current network state of 2G/3G. 0 and 99 mean no signal.
- **Cell state:** indicates the cellular is online or offline

## ➤ Internet Configurations

- **Connected Type:** indicates the selected WAN type.



The screenshot shows the 'Router' menu on the left, with 'Internet Settings' and 'WAN' highlighted. The main panel displays the 'WAN Connection Type' as 'Cell Network'. Below this, the 'Cell Mode' section shows the following configuration:

You may choose different connection type suitable for your environment. Besides, you configure parameters according to the selected connection type.

Cell Mode	
Cell Modem	HUAWEI-EM820W
Modem Description	HUAWEI WCDMA 3G modem
Network Type	AUTO

- **WPN IP address:** the IP expose when the router gets on internet.
- **Primary Domain Name Server:** indicates the primary DNS of set or from ISP.
- **Secondary Domain Name Server:** indicates the secondary DNS of set or from ISP.
- **MAC Address:** indicates the WAN MAC address

## ➤ Local Network

- **Local IP address:** the H820 Router LAN IP



- **MAC Address:** the LAN MAC address

#### ➤ VPN Status

- **IPSEC Status:** indicates IPSEC status info
- **PPTP Status:** indicates PPTP status info
- **L2TP Status:** indicates L2TP status info

### 3.3.15 SNMP (For version with SNMP only)

**Notes:** SNMP feature is for H820 Router with SNMP option only.

#### Soft tool download link:

<http://www.szelins.com/download/tool/SNMP-JManager-v1.0.rar>

H820 router web page – Internet Settings – SNMP

Fill in related parameters in the screen like follows,

[open all](#) | [close all](#)

- Cell Router
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
    - VPN Passthrough
    - Advanced Routing
    - VPN
    - DTU
    - SMS/Voice Command
    - Route Fail Over
    - SNMP**
    - GPS
  - Wireless Settings
  - Firewall
  - Administration

SNMP Settings	
SNMP Active	<input checked="" type="checkbox"/>
Contact Info	Jason
Location	E-Lins

SNMP V1 and V2c Settings	
User	public
Host/Lan	0.0.0.0/0
Writable	<input checked="" type="checkbox"/>

SNMP V3 Settings	
User	jason
Writable	<input checked="" type="checkbox"/>
Security Mode	<input type="radio"/> None <input type="radio"/> Authorized <input checked="" type="radio"/> Private
Authentication	<input checked="" type="radio"/> MD5 <input type="radio"/> SHA
Encryption	<input checked="" type="radio"/> DES <input type="radio"/> AES
Authentication Password	••••••••
Encryption Password	••••••••

Apply

SNMP Active: tick it to active SNMP feature.

Contact Info: set the contact info here

Location: set router's installation address.

User: set public name

Host/Lan: set the network range to visit the router via SNMP, default we set all as 0.0.0.0/0

Writable: tick it to enable it.

Security Mode: choose the correct one, only for SNMP V3 version.

Authentication: choose the correct one, only for SNMP V3 version.

Encryption: choose the correct one, only for SNMP V3 version.

Authentication Password: fill in the right one.

Encryption Password: fill in the right one.

Click "Apply" button and reboot the router.

Here list the most important OID:

1.3.6.1.4.1.2021.255.4.1.2.9.103.101.116.95.109.111.100.101.109.1

(read module modem model)

1.3.6.1.4.1.2021.255.4.1.2.10.103.101.116.95.117.112.116.105.109.101.1

(system running time)

1.3.6.1.4.1.2021.255.4.1.2.12.103.101.116.95.109.101.109.95.102.114.101.101.1

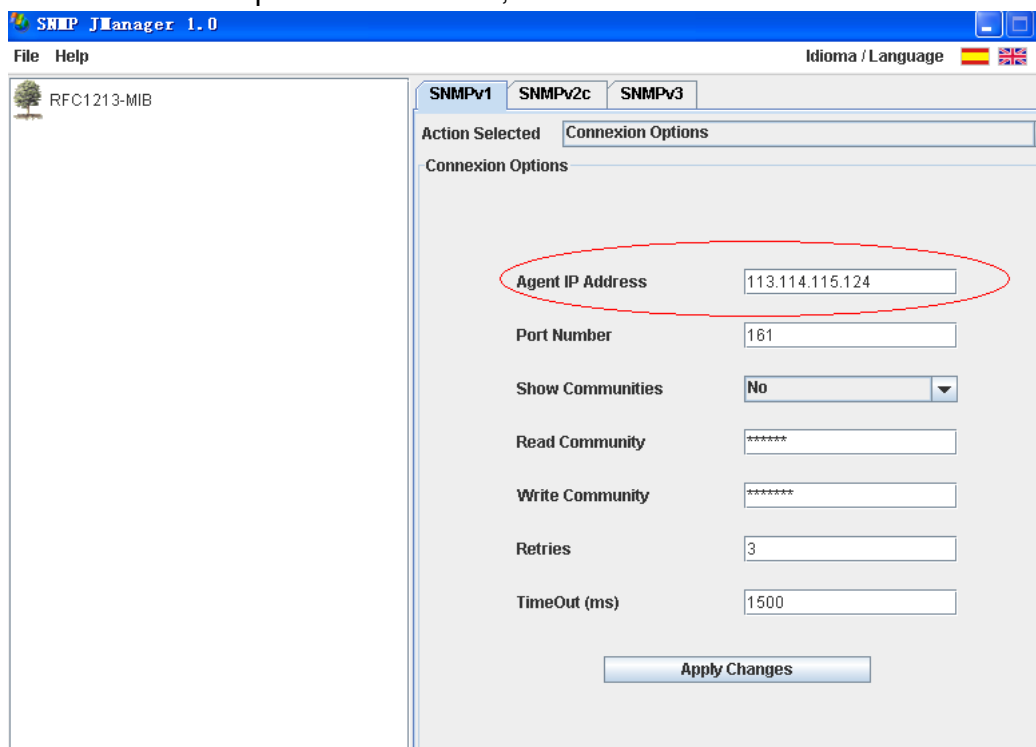
(memory capacity)

1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.99.101.108.108.95.115.116.97.116.117.115.1 (3G network status)

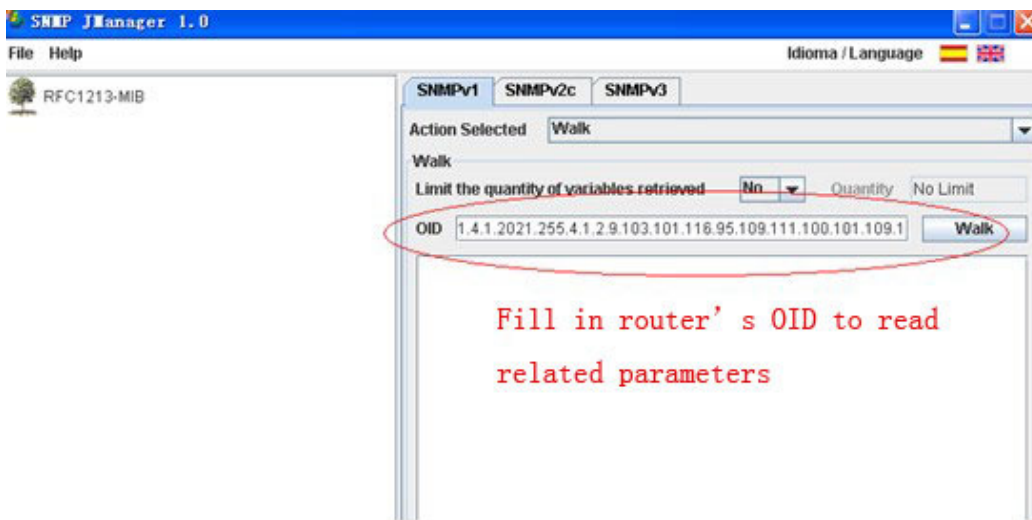
1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.108.50.116.112.95.115.116.97.116.117.115.1 (pptp status)

1.3.6.1.4.1.2021.255.4.1.2.15.103.101.116.95.112.112.116.112.95.115.116.97.116.117.115.1 (l2tp status)

List client side's picture as follows,







## 4 FAQ

### 4.1 Open Device Error

3G Info	
Signal Strength	open device error!

With this error, most of time the module inside the router is loosen. Please try to fasten it.

### 4.2 Read Error

3G Info	
Signal Strength	read error!
Attachment State	Automatic search

With this error, it indicates the sim card is not well touched with sim card slot. Try to check the sim card is right put. Try to scrap the sim card slot and make it clean.

### 4.3 Signal Strength has right number, but cannot dialup

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Try to check the WAN port setting is correct.

### 4.4 Signal Strength shows 99

3G Info	
Signal Strength	16 , (0-31)
Attachment State	Automatic search

Here it shows 16, it means signal is okay. If shows 99, try to check the sim card is has enough balance. Or if the data business is supported.

## 4.5 The router cannot be remote web visited

1) Default the router's web port is 80. Some network ISP block the 80 of incoming. So confirm with your ISP which port can be visited. Or you can change other port to try, such as port 10000. Refer to [chapter 3.3.14.1.1](#) Router web port to operate.

2) Check if the router's WAN IP can be ping through via the PC.

## 4.6 Signal shows 99 but still can connect to internet and get WAN IP

Our router built-in different types of modem inside, some modem cost this. But will not affect the use.

## 4.7 Router shows sim card and network info, but cannot connect to internet

Check the sim card is with balance or limited service by the ISP.

## 4.8 DDNS not working

- 1) Please confirm the DDNS configuration is correct.
- 2) Check if the router is online and get IP, and can visit internet.
- 3) Check if the WAN IP from sim card (shows in the status page once the router is online) is a public IP or privacy IP, privacy IP will make DDNS no work.

## 4.9 Cannot connect router

- 1) Please check if Ethernet cable is correctly connected.
- 2) Double check PC network card IP is correct configured. Please refer to *Chapter 3.2*
- 3) Try to disable the PC network card, and re-enable it.



4) Reset the H820 router. Power on router, keep press "RST" button until 12 seconds, and then release it. H820 router will automatically load default.

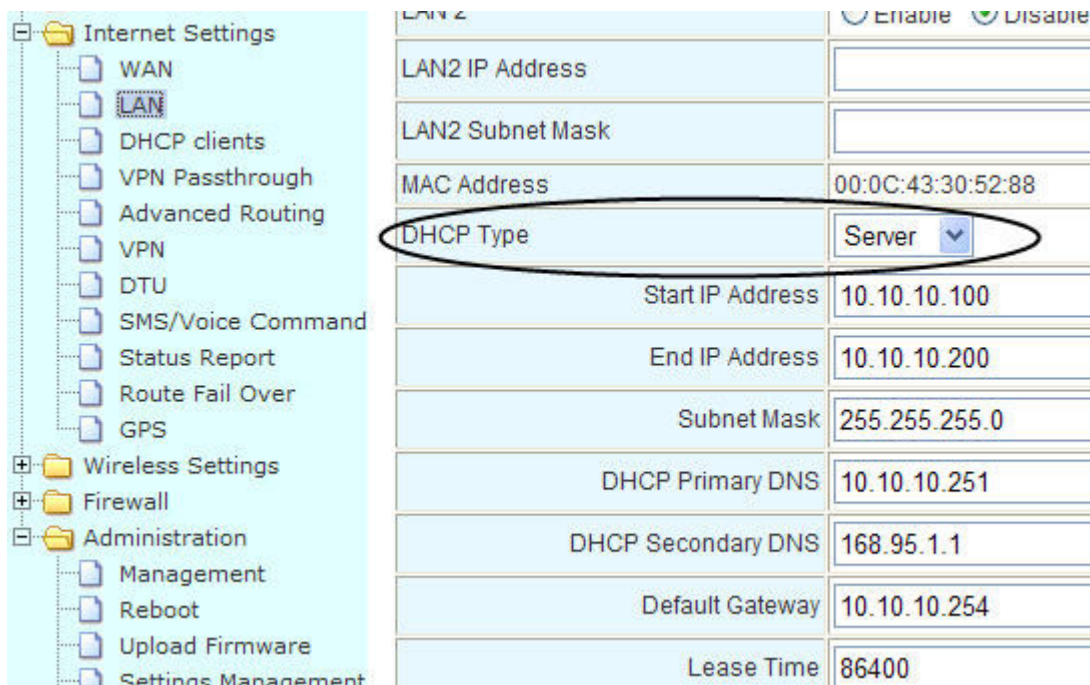


## 5 Test Samples

### 5.1 Two H820 make WiFi hotspot and WiFi client

Here we take H820 router for example. H685 setting method is the same with H820.

1. Take two H820 router. One will be WiFi server, the other will be WiFi Client. We name H820-s and H820-c
2. Connect PC with H820-s with RJ45 cable.
3. At H820-s and H820-c, make sure the DHCP service from both routers are working.



LAN2	<input type="checkbox"/> Enable <input checked="" type="checkbox"/> Disable
LAN2 IP Address	
LAN2 Subnet Mask	
MAC Address	00:0C:43:30:52:88
DHCP Type	Server
Start IP Address	10.10.10.100
End IP Address	10.10.10.200
Subnet Mask	255.255.255.0
DHCP Primary DNS	10.10.10.251
DHCP Secondary DNS	168.95.1.1
Default Gateway	10.10.10.254
Lease Time	86400

At H820-s,

3G Router

- Operation Mode
- Internet Settings
- Wireless Settings
- Firewall
- Administration

You may configure the operation mode suitable for you env

☐ Bridge:  
 All ethernet and wireless interfaces are bridged into a single LAN.

☒ Gateway:  
 The first ethernet port is treated as WAN port. The other interfaces are bridged together and are treated as LAN.

☐ AP Client:  
 The wireless apcli interface is treated as WAN port, all ethernet ports are LAN ports.

NAT Enabled Enable

Select "Gateway", and click "Apply".

4. At H820-s, "Wireless Settings--Basic", set Network Name (SSID) as "3G Router" (Here we recommend you use "3G Router" to test first)

Internet Settings

- Wireless Settings
  - Basic
  - Advanced
  - Security
  - WDS
  - WPS
  - Station List
- Firewall
- Administration

Network Name (SSID) and Channel. The Access Point can be set simply with only setting items.

Wireless Network		
Radio On/Off	RADIO OFF	
Network Mode	11b/g/n mixed mode	
Network Name(SSID)	3G Router	Hidden <input type="checkbox"/>
Multiple SSID1		Hidden <input type="checkbox"/>
Multiple SSID2		Hidden <input type="checkbox"/>
Multiple SSID3		Hidden <input type="checkbox"/>

And write down the "Frequency (Channel)" and "Extension Channel". Remember it and we shall use this value at H820-c.

Wireless Settings

- Basic
- Advanced
- Security
- WDS
- WPS
- Station List
- Firewall
- Administration

BSSID	00:0C:43:30:52:88
Frequency (Channel)	2437MHz (Channel 6)
HT Physical Mode	
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel BandWidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
Guard Interval	<input type="radio"/> Long <input checked="" type="radio"/> Auto
MCS	Auto
Reverse Direction Grant(RDG)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extension Channel	2457MHz (Channel 10)
Aggregation MSDU(A-MSDU)	<input checked="" type="radio"/> Disable <input type="radio"/> Enable

5. At H820-s, “Internet Settings—WAN—WAN Connection Type:”, choose as “3G”, and click “Apply”.  
configure parameters according to the selected connection type.

Internet Settings

- WAN
- LAN
- DHCP clients
- VPN Passthrough
- Advanced Routing
- VPN
- DTU
- SMS/Voice Command
- Status Report
- Route Fail Over
- GPS

Wireless Settings

Firewall

Administration

WAN Connection Type: 3G

**3G Mode**

USB 3G modem: HUAWEI-EM770

3G SIM Code:

MTU:

Operation Mode: Keep Alive

**MAC Clone**

Enabled: Disable

Apply Cancel

6. Try to connect the H820-s WiFi via your Laptop/PC. If can work, then go to step 7.
7. Connect PC with H820-c with RJ45 cable.
8. at H820-c, “Operation Mode”, choose “AP client”, and click “Apply”

3G Router

- Operation Mode
- Internet Settings
- Wireless Settings
- Firewall
- Administration

You may configure the operation mode suitable for you environ

☐ Bridge:  
All ethernet and wireless interfaces are bridged into a sin

☐ Gateway:  
The first ethernet port is treated as WAN port. The other et  
interface are bridged together and are treated as LAN port

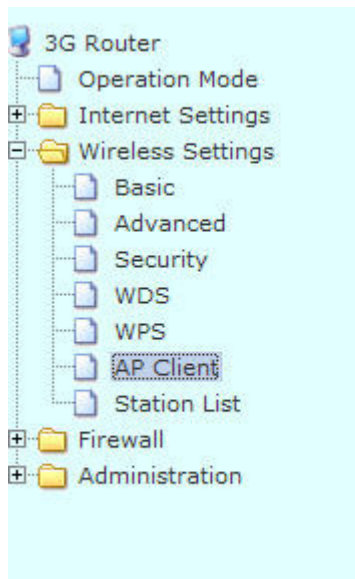
☒ AP Client:  
The wireless apcli interface is treated as WAN port, and th  
ethernet ports are LAN ports.

NAT Enabled: Enable

Apply Cancel

9. at H820-c, “Wireless Settings—AP Client—SSID”, here input the correct one. Here the value is from the H820-s.



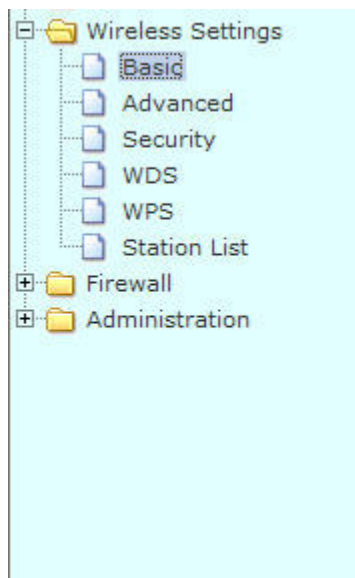


You could configure AP Client parameters here.

AP Client Parameters	
SSID	3G Router
MAC Address (Optional)	
Security Mode	OPEN
Encryption Type	None
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

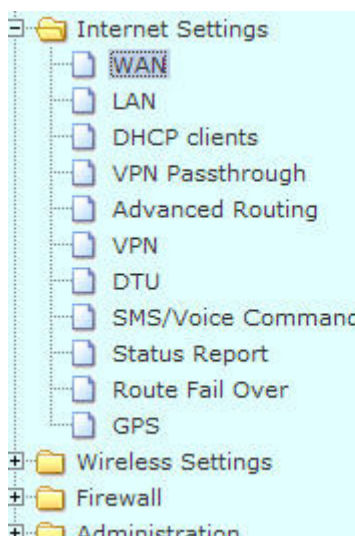
10. at H820-c,

“Frequency (Channel)” and “Extension Channel” should be the same as H820-s



BSSID	00:0C:43:30:52:88
Frequency (Channel)	2437MHz (Channel 6)
HT Physical Mode	
Operating Mode	<input checked="" type="radio"/> Mixed Mode <input type="radio"/> Green Field
Channel BandWidth	<input type="radio"/> 20 <input checked="" type="radio"/> 20/40
Guard Interval	<input type="radio"/> Long <input checked="" type="radio"/> Auto
MCS	Auto
Reverse Direction Grant(RDG)	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Extension Channel	2457MHz (Channel 10)
Aggregation MSDU(A-MSDU)	<input checked="" type="radio"/> Disable <input type="radio"/> Enable

11. at H820-c, “Internet Settings--WAN”, set the WAN connection type as “DHCP (Auto config)”, and click “Apply” button.



WAN Connection Type:	
	DHCP (Auto config)
DHCP Mode	
Hostname (optional)	
MAC Clone	
Enabled	Disable
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

12. Then check H820-c, “Administration--Status”, if it shows “Operation Mode” as “AP client Mode” and get “WAN IP Address”, that means the test is working.

[open all](#) | [close all](#)

- 3G Router
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
    - VPN Passthrough
    - Advanced Routing
    - VPN
    - DTU
    - SMS/Voice Command
    - Status Report
    - Route Fail Over
    - GPS
  - Wireless Settings
  - Firewall
  - Administration
    - Management
    - Reboot
    - Upload Firmware
    - Settings Management
    - Status**
    - Statistics
    - System Log

Product Model	3G Router
Software Version	2.5.4 (Jun 8 2011)
Hardware Version	1.0.0
Device ID	280630562C080435
System Up Time	17 mins, 52 secs
Operation Mode	AP Client Mode
<b>3G Info</b>	
Signal Strength	open device error!
Attachment State	Automatic search
<b>Local Network</b>	
Local IP Address	10.10.10.254
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:88
<b>Internet Configurations</b>	
Connected Type	DHCP
WAN IP Address	10.10.10.101
Subnet Mask	255.255.255.0
Default Gateway	
Primary Domain Name Server	10.10.10.251
Secondary Domain Name Server	168.95.1.1
MAC Address	00:0C:43:30:52:89

## 5.2 GPS feature (For version with GPS feature only)

Note: the test is simulation test to approve and show the feature. Please make it work in your real application. Here we run a TCP server tool as the GPS TCP server.

Step1: configure the GPS feature of the router.

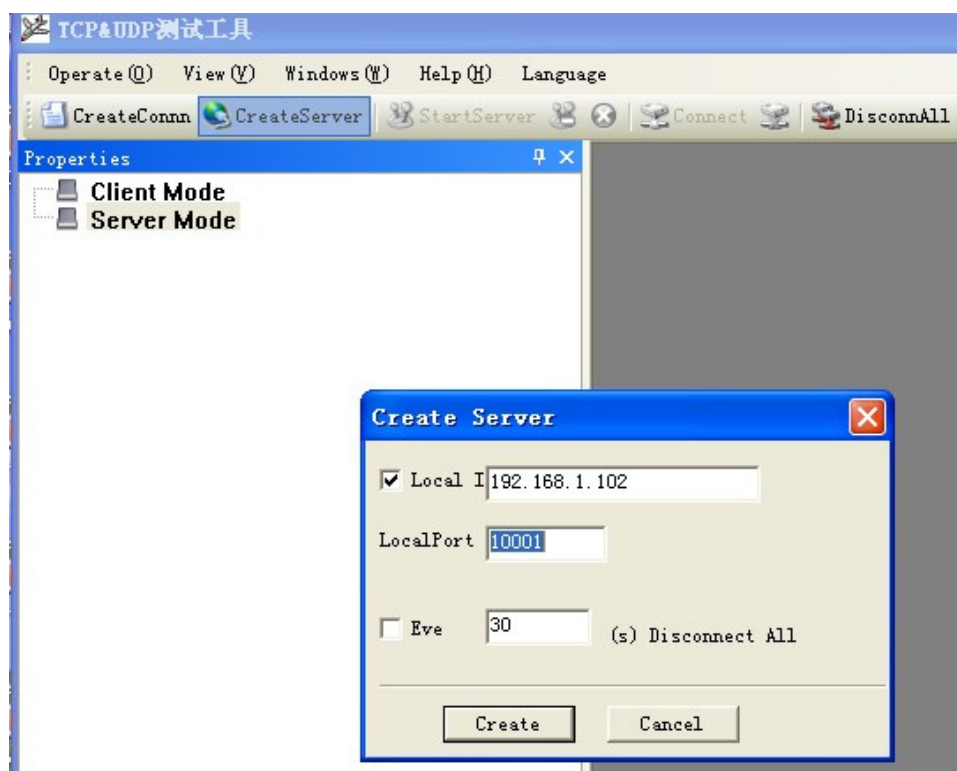
GPS Settings	
GPS Active	<input checked="" type="checkbox"/>
GPS Send to	<input type="radio"/> Serial <input checked="" type="radio"/> TCP/IP
GPS To Serial Settings	
Serial Baudrate	115200 <input type="button" value="v"/> bps
Serial Parity	none <input type="button" value="v"/>
Serial Databits	8 <input type="button" value="v"/> bits
Serial Stopbits	1 <input type="button" value="v"/> bits
Serial Flow Control	none <input type="button" value="v"/>
Comment: Do not used GPS with DTU when send to serial!	
GPS To TCP/IP Settings	
Socket Type	tcp <input type="button" value="v"/>
Server	27.38.13.57
Port	10001

Step 2: run the TCP server tool. You can ask us to get this tool if you need.

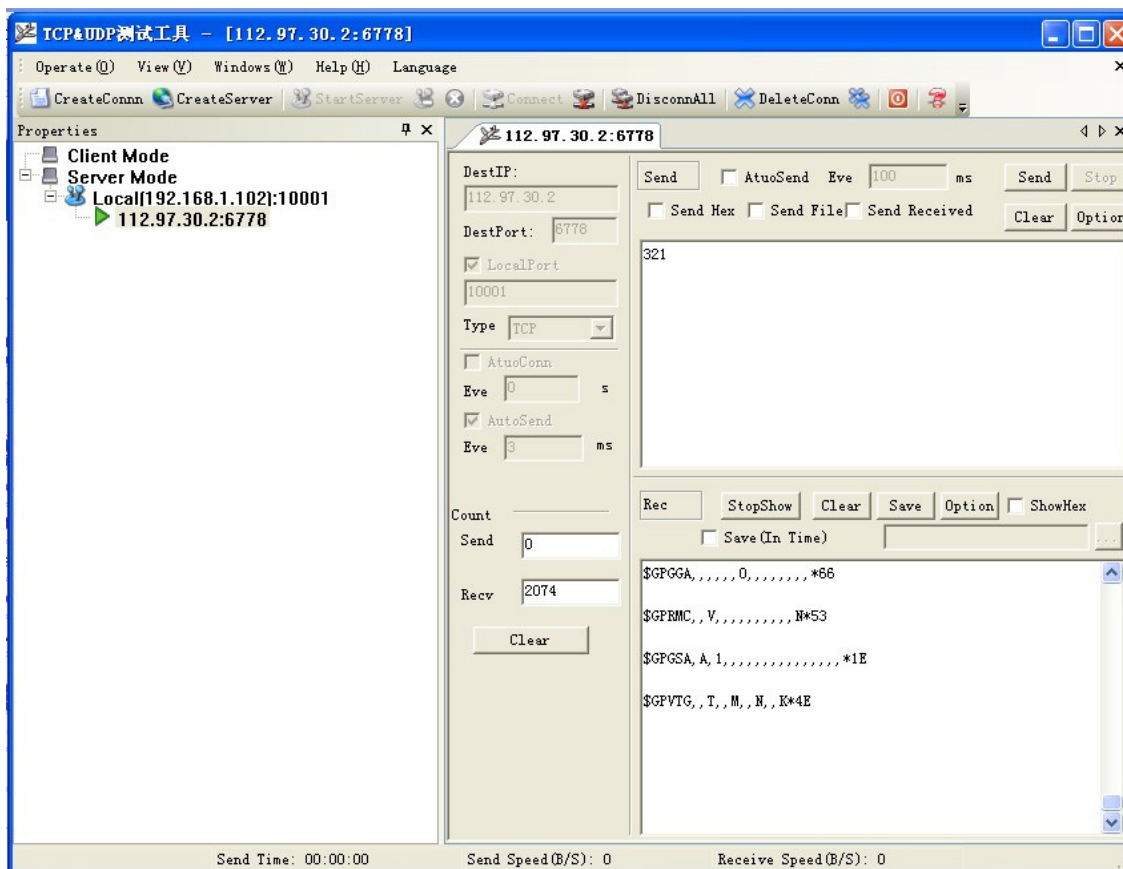
Create server, here our server is a local network PC with IP 192.168.1.102 and port 10001.

And we make a DMZ or NAT for this IP and port from the local router connected to internet with IP 27.38.13.57.

And in the router GPS configuration, we fill in "27.38.13.57" and port "10001".



Once the link is okay, it will show the following similar screen. If the route doesn't get the satellite, it appears and updates the GPS module info from the router to the TCP GPS server.



```
,*79
$GPGSV,3,3,09,15,12,087,*48
$GPGGA,,,,,0,,,,,,*66
$GPRMC,,V,,,,,,,,,N*53
$GPGSA,A,1,,,,,,,,,,,,*1E
$GPVTG,,T,,M,,N,,K*4E
```

Picture: Feedback string if not get the satellite.

If the route gets the satellite, it appears and updates the GPS module info from the router to the TCP GPS server with the following similar string.

```
$GPGSV,3,3,10,12,54,144,16,18,52,144,28*79
$GPGGA,142038.0,2237.083418,N,11402.206048,E,1,04,8.9,-
107.0,M,,,*,*21
$GPRMC,142038.0,A,2237.083418,N,11402.206048,E,,091211,
,,A*64
$GPGSA,A,3,18,21,22,31,,,,,,,,,13.5,8.9,10.1*3C
$GPVTG,,T,,M,0.0,N,0.0,K*4E
```

Picture: Feedback string if gets the satellite.



## 5.3 Port Forwarding (NAT, NAPT) test

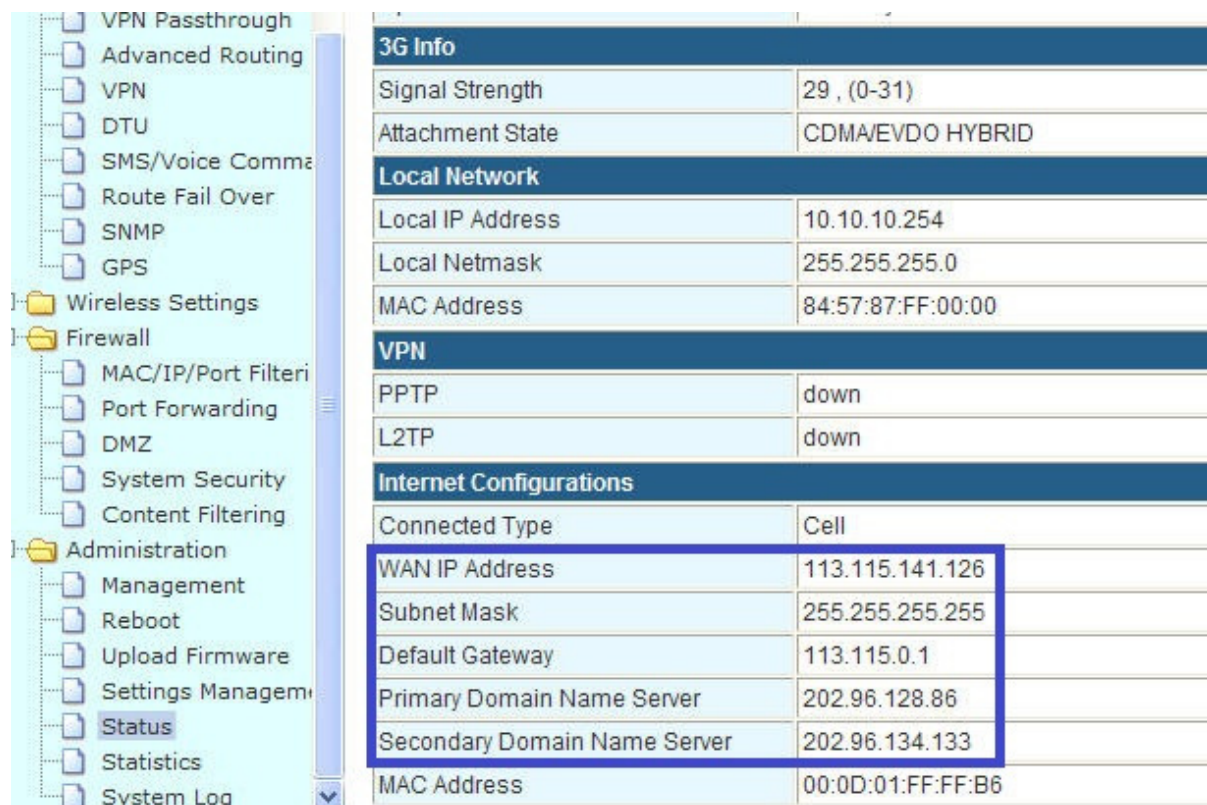
Note: the test is simulation test to approve and show the feature. Please make it work in your real application.

Warmly reminding:

Question: I configure the port forwarding feature correctly, but still no work.

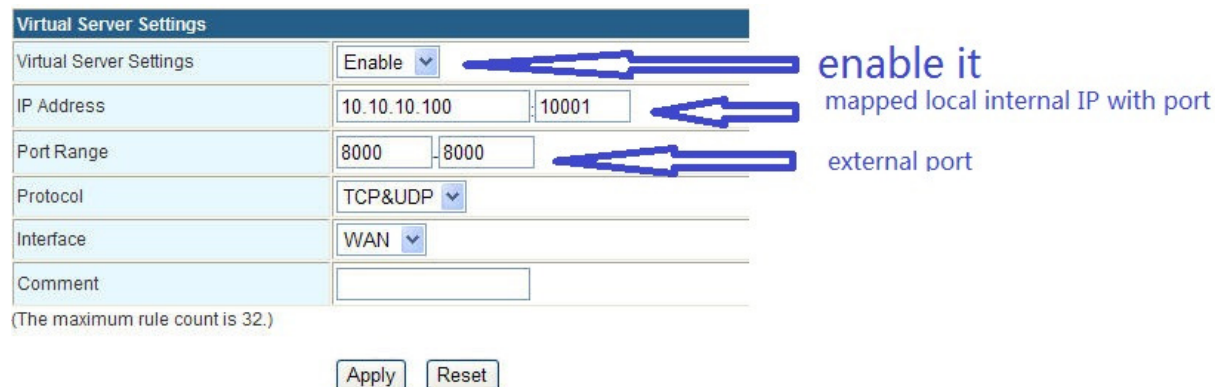
Answer: first, please check the port if block by your ISP, because some ISP block some ports for security reason. For example, the H820 gets WAN IP 27.38.14.223. And the H820's default web port is 80. So from the other network, try to visit [http:// 27.38.14.223:80](http://27.38.14.223:80) if can be okay. If no okay, it means the ISP blocks the 80 port. Then check with your ISP which ports are open for use. Then re-try the port forwarding feature.

Step 1) make H820 router to be online.



3G Info	
Signal Strength	29 , (0-31)
Attachment State	CDMA/EVDO HYBRID
Local Network	
Local IP Address	10.10.10.254
Local Netmask	255.255.255.0
MAC Address	84:57:87:FF:00:00
VPN	
PPTP	down
L2TP	down
Internet Configurations	
Connected Type	Cell
WAN IP Address	113.115.141.126
Subnet Mask	255.255.255.255
Default Gateway	113.115.0.1
Primary Domain Name Server	202.96.128.86
Secondary Domain Name Server	202.96.134.133
MAC Address	00:0D:01:FF:FF:B6

Step 2) configure the *port forwarding* feature for H820 router



Virtual Server Settings	
Virtual Server Settings	Enable
IP Address	10.10.10.100 10001
Port Range	8000 8000
Protocol	TCP&UDP
Interface	WAN
Comment	

(The maximum rule count is 32.)

Apply Reset

enable it  
mapped local internal IP with port  
external port

Click *Apply Button* to finish the setting. It will show the result in the following picture.

Current Virtual Servers in system:					
No.	IP Address	Port Range	Protocol	Interface	Comment
1 <input type="checkbox"/>	10.10.10.100:10001	8000 - 8000	TCP + UDP	WAN	

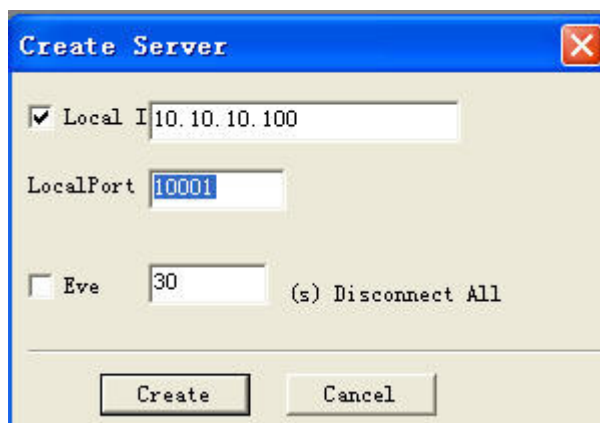
Step 3) here we take a PC to be as a TCP server/Remote Device.

Connect the PC to H820 router LAN port via RJ45 cable. And it gets an IP 10.10.10.100.

At the PC, run [TCP&UDP\\_debug](#) software (If you have no such software, require to get from us).



Firstly, click [Server Mode](#), and [CreateServer](#),



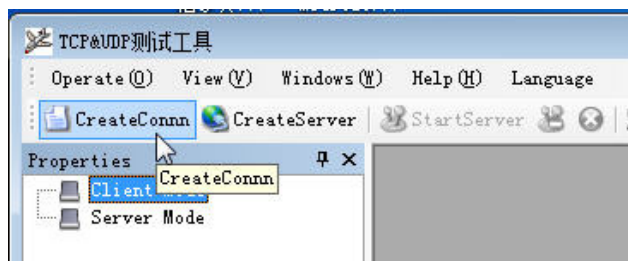
Secondly, fill in the parameters like this. The [Local IP](#) is the PC's IP from H820 router. The [LocalPort](#) is the port of the PC which will be mapped. Click [Create Button](#) to finish.



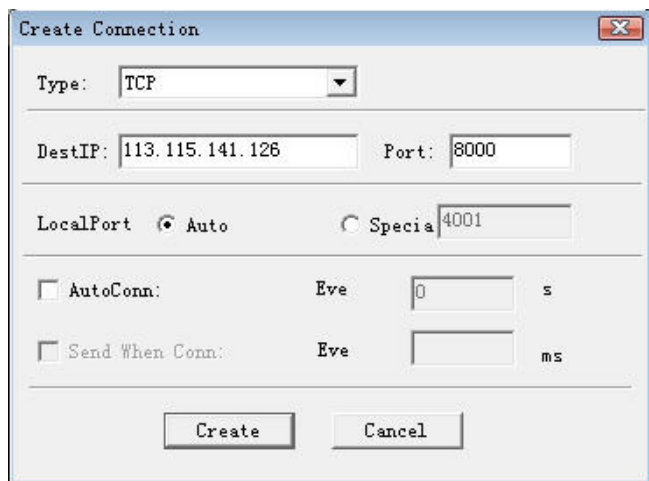
Choose the created server, and click [StartServer](#). It will show the following windows.

Step 4) here we take another PC to be as a TCP client.

This PC is with internet in another network. Run [TCPUDP\\_debug](#) software tool, choose [Client Mode](#),

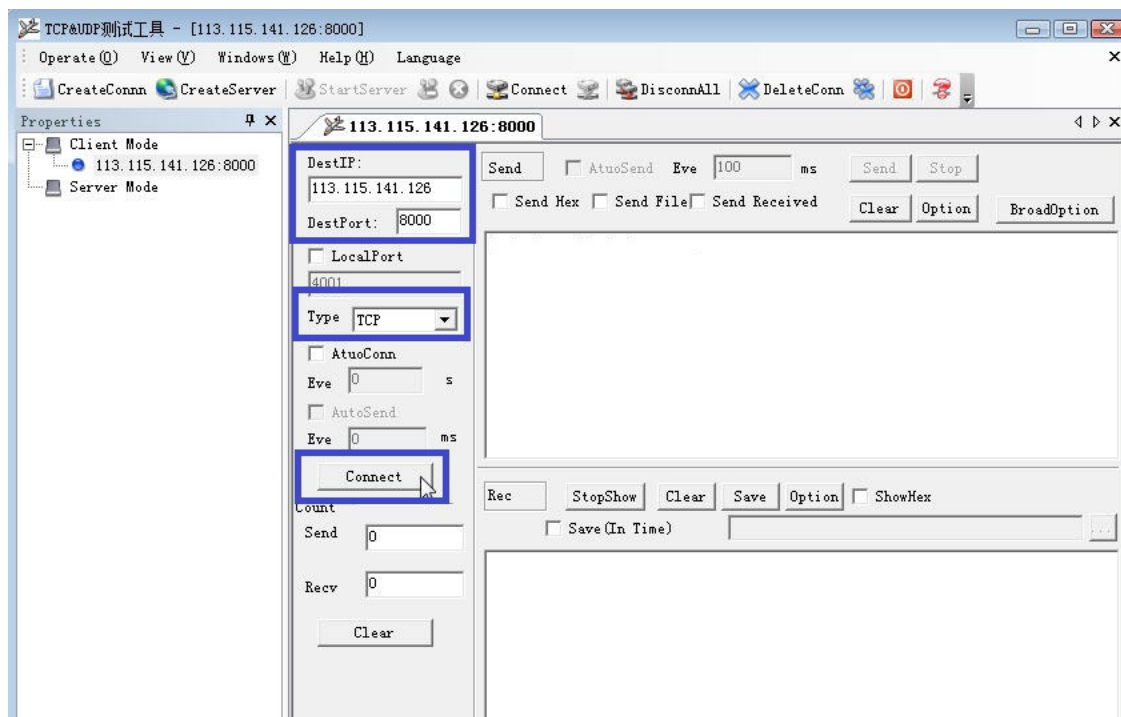


and click [CreateConn](#),



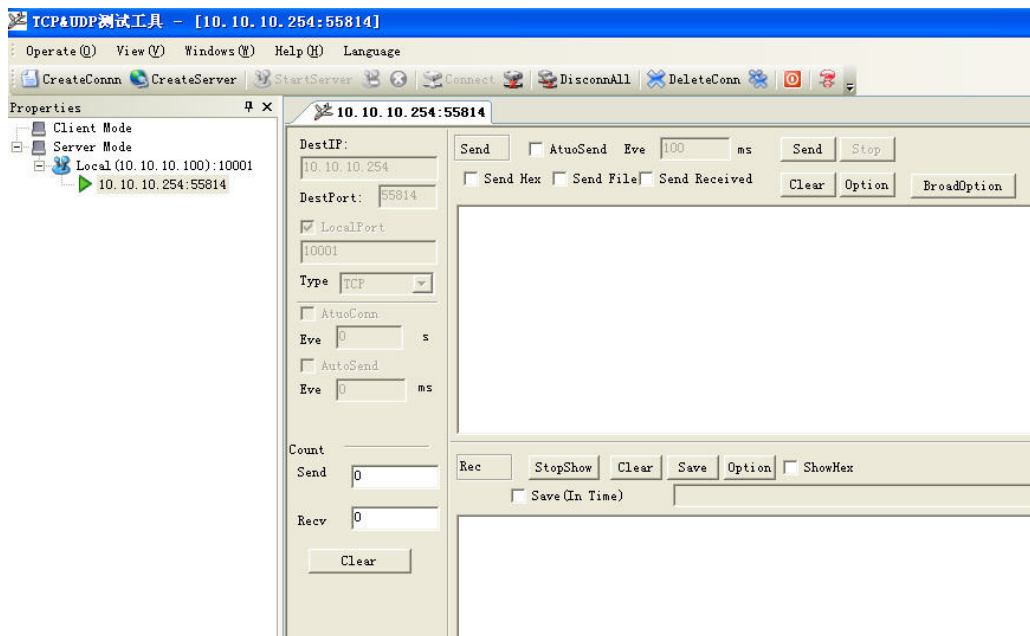
Type: choose TCP, DestIP: fill in the H820 router's WAN IP (here is 113.115.141.126), Port: 8000 (This port is external port for mapped port 10001). Click [Create](#) button to finish.

Then check the DestIP, DestPort and Type, and click [Connect](#) button to link.



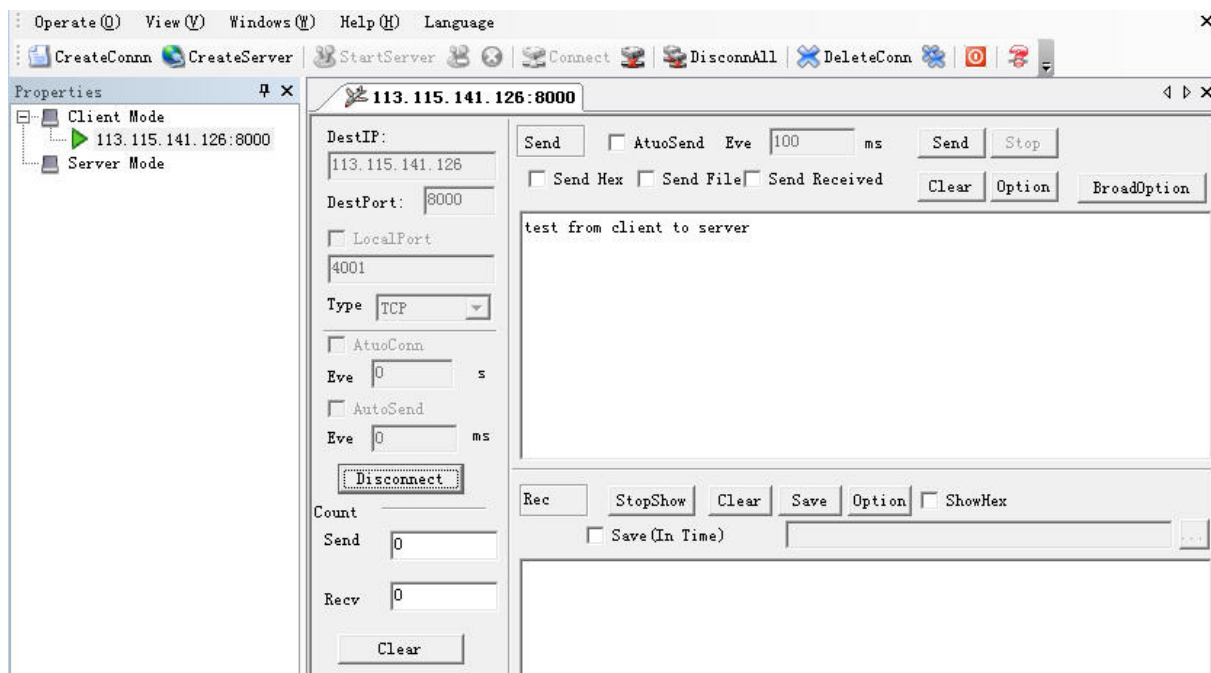
Once the link is done, at the Server PC's side, it shows the following picture, which indicates the link is created.



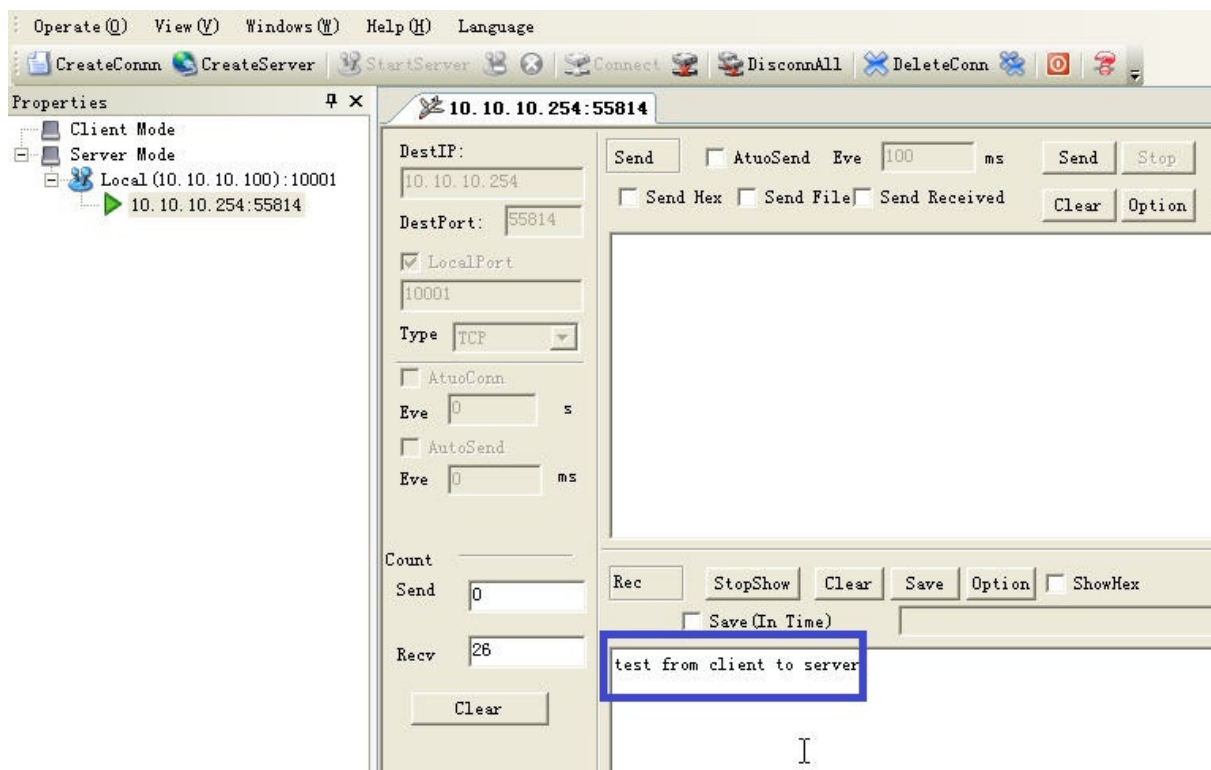


Step 5) Test the link for sending and receiving

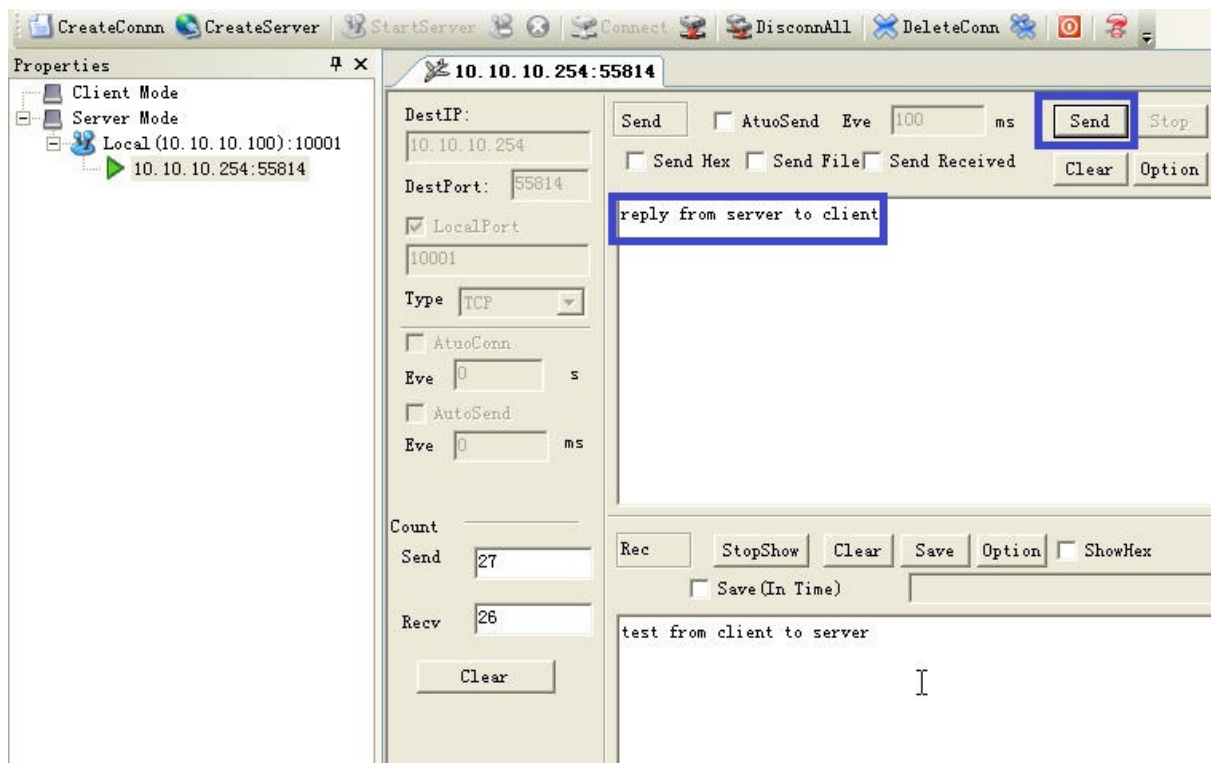
At client PC, type “test from client to server”, and click [Send](#) button.



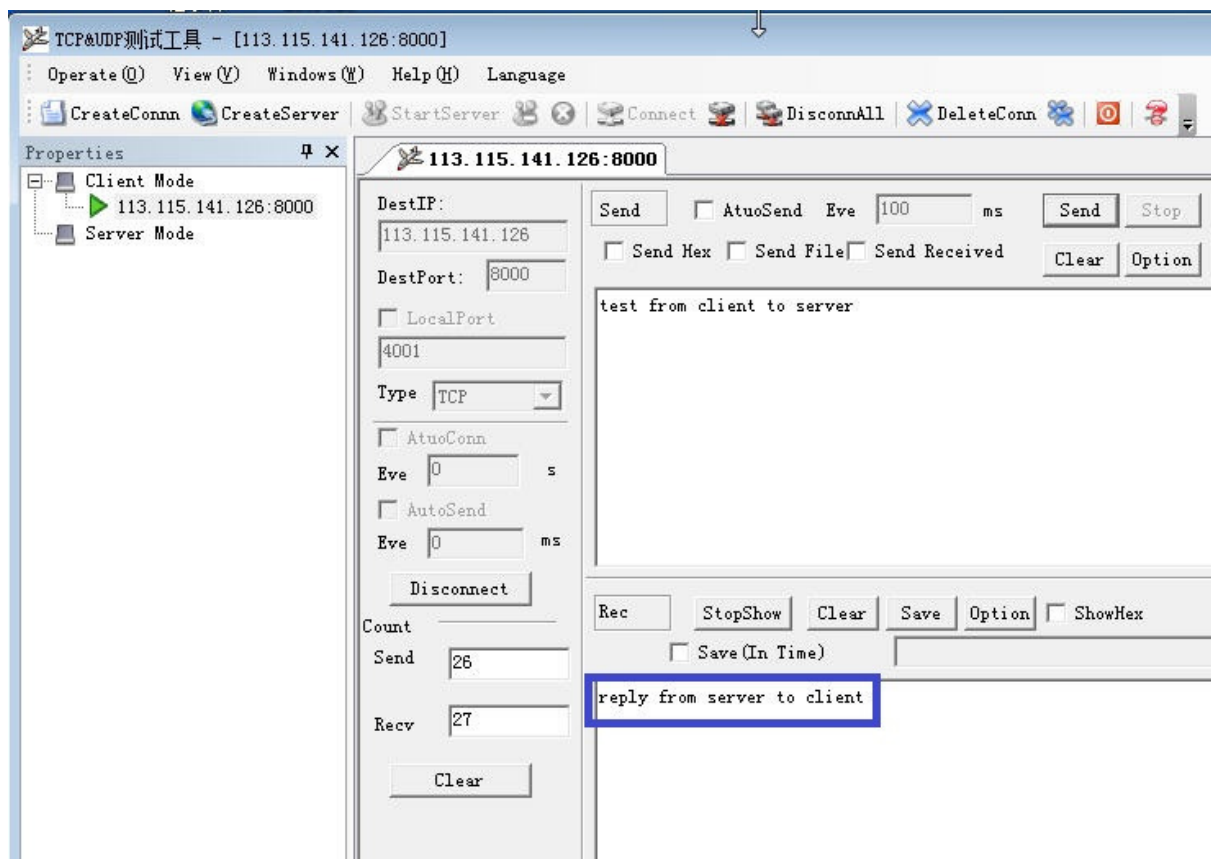
At the server PC, it will receive the info the client PC.



At Server PC, type “reply from server to client”, and click [Send](#) button.



At the client PC side, it will receive the related info from server PC side.



With this result, it indicates the port forwarding is working.

## 5.4 Remote Web Login

Step 1) make H820 router to be online and get a public WAN IP.

Cell Router	Software Version	3.6.16 (Mar 17 2012)
Operation Mode	Hardware Version	3.0.0
Internet Settings	Device ID	20F710B7CD0E00F8
Wireless Settings	System Up Time	10 mins, 8 secs
Firewall	Operation Mode	Gateway Mode
Administration	<b>Cell Info</b>	
Management	Signal Strength	10 , (0-31)
Reboot	Attachment State	Automatic search
Upload Firmware	<b>Local Network</b>	
Settings Management	Local IP Address	10.10.10.254
Status	Local Netmask	255.255.255.0
Statistics	MAC Address	00:0A:EB:11:82:E0
System Log	<b>VPN</b>	
	PPTP	down
	L2TP	down
	<b>Internet Configurations</b>	
	Connected Type	Cell
	WAN IP Address	172.30.67.227
	Subnet Mask	255.255.255.255
	Default Gateway	10.64.64.64
	Primary Domain Name Server	210.21.196.6
	Secondary Domain Name Server	221.5.88.88

Here the H820 router gets WAN IP of 172.30.67.227, which is not a public IP, and cannot be ping through via the test PC. So we cannot make the remote visit of the H820 router web.

Let's get a public IP for H820 router first. Here we change another sim card to test.

- Cell Router
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
    - VPN Passthrough
    - Advanced Routing
    - VPN
    - DTU
    - SMS/Voice Command
    - Route Fail Over
    - SNMP
    - GPS
  - Wireless Settings
  - Firewall
  - Administration
    - Management
    - Reboot
    - Upload Firmware
    - Settings Management
    - Status
    - Statistics
    - System Log

Software Version	3.6.16 (Mar 17 2012)
Hardware Version	3.0.0
Device ID	20F710B7CD0E00F8
System Up Time	7 mins, 58 secs
Operation Mode	Gateway Mode
<b>Cell Info</b>	
Signal Strength	31 , (0-31)
Attachment State	CDMA/EVDO HYBRID
<b>Local Network</b>	
Local IP Address	10.10.10.254
Local Netmask	255.255.255.0
MAC Address	00:0A:EB:11:82:E0
<b>VPN</b>	
PPTP	down
L2TP	down
<b>Internet Configurations</b>	
Connected Type	Cell
WAN IP Address	183.43.55.249
Subnet Mask	255.255.255.255
Default Gateway	113.115.0.1
Primary Domain Name Server	202.96.128.86
Secondary Domain Name Server	202.96.134.133

H820 router gets a WAN IP 183.43.55.249, which is a public IP, and can ping though.

```
正在 Ping 183.43.55.249 具有 32 字节的数据:
请求超时。
来自 183.43.55.249 的回复: 字节=32 时间=1480ms TTL=52
来自 183.43.55.249 的回复: 字节=32 时间=67ms TTL=52
来自 183.43.55.249 的回复: 字节=32 时间=79ms TTL=52
来自 183.43.55.249 的回复: 字节=32 时间=92ms TTL=52
来自 183.43.55.249 的回复: 字节=32 时间=69ms TTL=52
来自 183.43.55.249 的回复: 字节=32 时间=71ms TTL=52
来自 183.43.55.249 的回复: 字节=32 时间=65ms TTL=52
```

Step 2) Make sure the "Remote Management" feature is activated.

<b>Remote management</b>	
Remote management (via WAN)	Allow
<hr/>	
<b>Ping form WAN Filter</b>	
Ping form WAN Filter	Disable
<hr/>	
<b>Stateful Packet Inspection (SPI)</b>	
SPI Firewall	Disable
<hr/>	
Apply	Reset

Step 3) at the test PC, open the IE, and input <http://183.43.55.249:80> to enter the H820 router's web.

Notes:

1) The H820 router's web port default is 80. Some ISP block the port 80 because of some security. Then please confirm the ISP the opened port, and change the web port for H820 router before remote visiting.

Please refer to [Chapter 3.3.14.1.1 Router web port](#) to change the web port.

2) If you cannot get a fixed public WAN IP, you can use H820 router's DDNS feature. Refer to [chapter 3.3.14.1.3 DDNS settings](#) to configure.

Then you can input <http://ddns:port> to visit the H820 router's web port.

## 5.4 WAN RJ45 Static (fixed IP) and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the upper Router LAN RJ45 port via RJ45 cable. The H820 WAN LED should be on.

Step 1) log into the H820 router web.

Step 2) Internet Settings – Route Fail Over

open all | close all

3G Router

- Operation Mode
- Internet Settings
  - WAN
  - LAN
  - DHCP clients
  - VPN Passthrough
  - Advanced Routing
  - VPN
  - DTU
  - SMS/Voice Comm
  - Route Fail Over**
  - SNMP
  - GPS
- Wireless Settings
- Firewall
- Administration
  - Management
  - Reboot

### Route Fail Over

<b>Operation Mode</b>	
Active/Passive	<input checked="" type="checkbox"/>
Back To Primary WAN When Possible	<input checked="" type="checkbox"/>
<b>Router Priority</b>	
Cellular	<input type="radio"/> High Priority <input checked="" type="radio"/> Low Priority
STATIC	<input checked="" type="radio"/> High Priority <input type="radio"/> Low Priority
<b>Connectivity Check</b>	
Check Count	3 (1-50)
Check Method	ping ip 74.125.71.138

Apply

**Active/Passive:** tick it

**Back To Primary WAN When Possible:** tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

**Router Priority:** You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 STATIC as main line. Then choose as the picture above.

**Check Count:** fill in the number you want to check the line available detection.

**Checking Method:** fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure H820 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy



## Wireless M2M Cellular Router/Modem

[open all](#) | [close all](#)

- 3G Router
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
    - VPN Passthrough
    - Advanced Routing
    - VPN
    - DTU
    - SMS/Voice Command
    - Route Fail Over
    - SNMP
    - GPS
  - Wireless Settings
  - Firewall
  - Administration

WAN Connection Type:

Cell

Cell Mode	
modem	HUAWEI-EM770
SIM Code	
MTU	
Operation Mode	Keep Alive
MAC Clone	
Enabled	Disable
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

mobile MSP Parameters	
MSP Name	WCDMA
network type	Automatic search
Dialing Number	*99#
Initial Command String	
User Name	wap
Password	...
Local IP	
Authenticate Type	AUTO
Use Software Compress	<input type="checkbox"/> Enable
common command list	GSM/WCDMA/TD: AT+CGDCONT=1,"IPI","APN", CDMA/EVDO: AT+PPPCFG="user","password"
<input type="button" value="Add to List"/>	

MSP List							
No.	MSP Name	Dialing Number	Initial Command String	User Name	Password	Local IP	Operation
<input type="radio"/>	CDMA	#777		CARD	CARD		<input type="button" value="Delete"/>
<input checked="" type="radio"/>	WCDMA	*99#		wap	wap		<input type="button" value="Delete"/>
<input type="radio"/>	TD-SCDMA	*99***1#		wap	wap		<input type="button" value="Delete"/>

Step 4) Internet Settings – WAN – WAN Connection Type – STATIC (fixed IP)

Configure the STATIC (fixed IP),

[open all](#) | [close all](#)

- Cell Router
  - Operation Mode
  - Internet Settings
    - WAN
    - LAN
    - DHCP clients
    - VPN Passthrough
    - Advanced Routing
    - VPN
    - DTU
    - SMS/Voice Command
    - Route Fail Over
    - SNMP
    - GPS
  - Wireless Settings
  - Firewall
  - Administration
    - Management
    - Reboot
    - Upload Firmware
    - Settings Management
    - Status

## Wide Area Network (WAN) Settings

You may choose different connection type suitable for your environment. Besides, you may also configure parameters according to the selected connection type.

WAN Connection Type:

STATIC (fixed IP)

Static Mode	
IP Address	192.168.1.128
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary DNS Server	210.21.196.6
Secondary DNS Server	221.5.88.88
MAC Clone	
Enabled	Disable
<input type="button" value="Apply"/> <input type="button" value="Cancel"/>	

**IP Address:** fill in the assigned fixed LAN IP address from the upper router for H820. Here our upper router can assign a fixed LAN IP 192.168.1.128 for H820.



**Secondary DNS Server:** fill in a right DNS server.

Step 5) The H820 router will automatically reboot and try to connect the STATIC WAN RJ45 as main line. If main line failed, it will switch to Cell as secondary line. And if STATIC WAN RJ45 resume to work, it will switch from Cell line to STATIC WAN RJ45 line.

The screenshot shows the WinBox interface. On the left, the 'Administration' menu is expanded, and 'Status' is highlighted. On the right, the 'Internet Configurations' table is displayed with the following data:

Internet Configurations	
Connected Type	STATIC
WAN IP Address	192.168.1.128
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

## 5.5 WAN RJ45 DHCP and Cellular Fail Over backup redundancy

## Step 2) Internet Settings – Route Fail Over

The screenshot shows the configuration interface for a Cell Router. On the left, a sidebar lists various settings, with 'Route Fail Over' highlighted under 'Internet Settings'. The main area on the right is titled 'Route Fail Over' and contains the following configuration options:

Operation Mode	
Active/Passive	<input checked="" type="checkbox"/>
Back To Primary WAN When Possible	<input checked="" type="checkbox"/>

Router Priority	
Cellular	<input type="radio"/> High Priority <input checked="" type="radio"/> Low Priority
DHCP	<input checked="" type="radio"/> High Priority <input type="radio"/> Low Priority

Connectivity Check	
Check Count	3 (1-50)
Check Method	ping ip 74.125.71.138

At the bottom of the configuration area is an 'Apply' button.

**Active/Passive:** tick it

**Back To Primary WAN When Possible:** tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

**Router Priority:** You can select main line and secondary line for Cellular and WAN RJ45 "STATIC/DHCP/PPPoE"

For example, here we set Cellular as secondary line, and WAN RJ45 DHCP as main line. Then choose as the picture above.

**Check Count:** fill in the number you want to check the line available detection.

**Checking Method:** fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74.125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

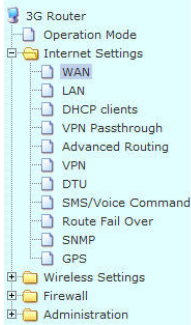
Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure H820 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy

## Wireless M2M Cellular Router/Modem

[open all](#) | [close all](#)



WAN Connection Type: Cell

**Cell Mode**

modem	HUAWEI-EM770
SIM Code	
MTU	
Operation Mode	Keep Alive

**MAC Clone**

Enabled	Disable
---------	---------

Apply Cancel

**mobile MSP Parameters**

MSP Name	WCDMA
network type	Automatic search
Dialing Number	*99#
Initial Command String	
User Name	wap
Password	...
Local IP	
Authenticate Type	AUTO
Use Software Compress	<input type="checkbox"/> Enable
common command list	GSM/WCDMA/TD: AT+CGDCONT=1,"IPI","APN", CDMA/EVDO: AT+PPPCFG="user","password"

Add to List

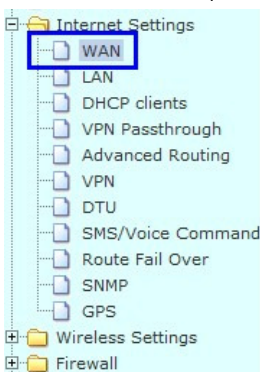
**MSP List**

No.	MSP Name	Dialing Number	Initial Command String	User Name	Password	Local IP	Operation
<input type="radio"/>	CDMA	#777		CARD	CARD		<span>Delete</span>
<input checked="" type="radio"/>	WCDMA	*99#		wap	wap		<span>Delete</span>
<input type="radio"/>	TD-SCDMA	*99***1#		wap	wap		<span>Delete</span>

Select to Use

Step 4) Internet Settings – WAN – WAN Connection Type – DHCP (Auto config)

Choose “DHCP (Auto config)” at WAN Connection Type, and click “Apply” button



Configure parameters according to the selected connection type.

WAN Connection Type: DHCP (Auto config)

**DHCP Mode**

Hostname (optional)	
---------------------	--

**MAC Clone**

Enabled	Disable
---------	---------

Apply Cancel

Notes: Do not forget to click “Apply” button.

Step 5) The H820 router will automatically reboot and try to connect the DHCP WAN RJ45 as main line. If main line failed, it will switch to Cell as secondary line. And if DHCP WAN RJ45 resume to work, it will switch from Cell line to DHCP WAN RJ45 line.

The following page indicated the DHCP is working.

Internet Configurations	
Connected Type	DHCP
WAN IP Address	192.168.1.103
Subnet Mask	255.255.255.0
Default Gateway	192.168.1.1
Primary Domain Name Server	192.168.1.1
Secondary Domain Name Server	
MAC Address	00:0D:01:FF:52:66

Once the DHCP (Auto config) is failed, H820 will switch to cellular automatically as follows,

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

Notes: if the DHCP cannot get WAN IP Address, please “Load Default” for H820 router to retry.

## 5.6 WAN RJ45 PPPoE and Cellular Fail Over backup redundancy

Please connect the RJ45 WAN port and the ADSL modem RJ45 port via RJ45 cable. The H820 WAN LED should be on.

Step 1) log into the H820 router web.

Step 2) Internet Settings – Route Fail Over

Internet Settings
WAN
LAN
DHCP clients
VPN Passthrough
Advanced Routing
VPN
DTU
SMS/Voice Command
Route Fail Over
SNMP
GPS
Wireless Settings
Firewall
Administration
Management
Reboot

Operation Mode

Active/Passive ☒
Back To Primary WAN When Possible ☒

Router Priority

Cellular ☐ High Priority ☒ Low Priority
PPPOE ☒ ☐ High Priority ☐ Low Priority

Connectivity Check

Check Count 3 (1-50)
Check Method ping ip 74.125.71.138

Apply

**Active/Passive:** tick it

**Back To Primary WAN When Possible:** tick it (if you activate this, the router will automatically switch to primary main line from secondary line if primary main line resume to work. If you don't activate this, the router will keep working in secondary line if primary line fails.)

**Router Priority:** You can select main line and secondary line for Cellular and WAN RJ45 “STATIC/DHCP/PPPoE”

For example, here we set Cellular as secondary line, and WAN RJ45 PPPOE as main line. Then choose as the picture above.

**Check Count:** fill in the number you want to check the line available detection.

**Checking Method:** fill in a public IP address that can be ping through.

With the above configuration, the router will try to ping IP 74. 125.71.138 and if cannot be through for 3 times continuously, it will switch to secondary line.

Step 3) Internet Settings – WAN – WAN Connection Type – Cell.

Configure the Cell WAN parameters.

Please make sure H820 can be Cell online after this configuration. Otherwise the fail over feature will not work in redundancy

Wireless M2M Cellular Router/Modem

[open all](#) | [close all](#)

3G Router

Operation Mode

Internet Settings

WAN

LAN

DHCP clients

VPN Passthrough

Advanced Routing

VPN

DTU

SMS/Voice Command

Route Fail Over

SNMP

GPS

Wireless Settings

Firewall

Administration

WAN Connection Type: Cell

Cell Mode

modemHUAWEI-EM770

SIM Code

MTU

Operation ModeKeep Alive

MAC Clone

EnabledDisable

ApplyCancel

mobile MSP Parameters

MSP NameWCDMA

network typeAutomatic search

Dialing Number\*99#

Initial Command String

User Namewap

Password

Local IP

Authenticate TypeAUTO

Use Software Compress☐ Enable

common command listGSM/WCDMA/TD: AT+CGDCONT=1,"IP","APN",  
CDMA/EVDO: AT+PPPCFG="user","password"

Add to List

MSP List

No.	MSP Name	Dialing Number	Initial Command String	User Name	Password	Local IP	Operation
<input type="radio"/>	CDMA	#777		CARD	CARD		Delete
<input checked="" type="radio"/>	WCDMA	*99#		wap	wap		Delete
<input type="radio"/>	TD-SCDMA	*99***1#		wap	wap		Delete

Select to Use

Step 4) Internet Settings – WAN – WAN Connection Type – PPPoE (ADSL)



- Internet Settings
  - WAN**
  - LAN
  - DHCP clients
  - VPN Passthrough
  - Advanced Routing
  - VPN
  - DTU
  - SMS/Voice Command
  - Route Fail Over
  - SNMP
  - GPS
- Wireless Settings
- Firewall
- Administration
  - Management
  - Reboot
  - Upload Firmware
  - Settings Management
  - Status
  - Statistics
  - System Log

WAN Connection Type: **PPPoE (ADSL)**

**PPPoE Mode**

User Name	pppoe_user
Password	••••••••••
Verify Password	••••••••••
MTU	
Operation Mode	Keep Alive
	Keep Alive Mode: Redial Period <b>60</b> seconds
	On demand Mode: Idle Time <b>5</b> minutes

**MAC Clone**

Enabled	Disable
---------	---------

**Apply** **Cancel**

Fill in the correct parameters for xDSL.

Notes: Do not forget to click “Apply” button.

Step 5) The H820 router will automatically reboot and try to connect the WAN RJ45 PPPoE as main line. If main line failed, it will switch to Cell as secondary line. And if WAN RJ45 PPPoE resume to work, it will switch from Cell line to WAN RJ45 PPPoE line.

The following page indicated the PPPoE is working.

- Administration
  - Management
  - Reboot
  - Upload Firmware
  - Settings Management
  - Status**
  - Statistics
  - System Log

Local Network	
Local IP Address	10.10.10.254
Local Netmask	255.255.255.0
MAC Address	00:0C:43:30:52:77
VPN	
IPSEC	down
PPTP	down
L2TP	down
Internet Configurations	
Connected Type	PPPOE
WAN IP Address	112.95.36.124
Subnet Mask	255.255.255.255
Default Gateway	112.95.32.1
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	00:0D:01:FF:52:66

Once the PPPoE (ADSL) is failed, H820 will switch to cellular automatically as follows,

Internet Configurations	
Connected Type	Cell
WAN IP Address	172.20.5.78
Subnet Mask	255.255.255.255
Default Gateway	10.64.64.64
Primary Domain Name Server	210.21.196.6
Secondary Domain Name Server	221.5.88.88
MAC Address	6D:61:67:65:00:00

## 5.7 SMS Reboot/Cell UP/Cell Down control

**Step 1)** follow Chapter 3.3.9 to configure the SMS feature. We configure it as follows,


### SMS/Voice Settings

SMS/Voice Command Settings			
Message/Voice status	on ▼		
telephone number			
number 1	13798257916	<input checked="" type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 2		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 3		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 4		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 5		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 6		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 7		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 8		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 9		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM
number 10		<input type="checkbox"/> SMS	<input type="checkbox"/> VOICE <input type="checkbox"/> ALARM



SMS	
SMS Command	on ▼
Send ack SMS	on ▼
Reboot Router Command	reboot
Get Cell Status Command	cellstatus
Cell link-up Command	cellup
Cell link-down Command	celldown
DIO_0 Set Command	dio01
DIO_0 Reset Command	dio00
DIO_1 Set Command	dio11
DIO_1 Reset Command	dio10
DIO Status Command	diostatus

**Step 2)** for EVDO version, please keep your UIM Card can get CDMA1x network also, otherwise the router cannot support SMS feature because SMS cannot work on EVDO network but on CDMA1x network.

Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-71 dbm 
Cell Status	UP

For WCDMA/GSM/W-LTE, it has no limitation.

### Step 3) CELL DOWN control test


Send "celldown" from send's phone number (here is 13798257916). In the System Log of the router, you can find the similar info "received index=0 msg (celldown) from (13798257916) !"

The Router CELL will be offline, and WAN IP will be none as followed status.

[open all](#) | [close all](#)


Router

- Status
- Operation Mode
- DTU
- Link Backup
- GPS
- SMS/Voice
- VRRP
- Internet Settings
- VPN
- WIFI
- Firewall
- Administration

Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-71 dbm 
Cell Status	DOWN
Internet Configurations	
Connected Type	CELL
WAN IP Address	
Subnet Mask	
Default Gateway	
Primary Domain Name Server	202.96.128.86
Secondary Domain Name Server	202.96.134.133
MAC Address	08:66:01:00:00:04

### Step 4) CELL UP control test

From sender's phone number 13798257916, send "cellup" to router sim/uim card number. At the router "System Log", there is info similar "received index=0 msg (cellup) from (13798257916) ". The router cell will dialup to be online.

System Info	
Series	H820
SN	086412090002
Software Version	2.2.0 (Sep 16 2012)
Hardware Version	1.0.0
System Up Time	1:10
Operation Mode	Gateway Mode
Cell Network Info	
Cell Modem	SIERRA_MC5725
IMEI/ESN	802A76CC
Sim Status	SIM:READY
Selected Network	AUTO
Registered Network	EVDO and CDMA 1X
Signal	-68 dbm 
Cell Status	UP
Internet Configurations	
Connected Type	CELL
WAN IP Address	113.112.46.31
Subnet Mask	255.255.255.255
Default Gateway	113.112.0.1
Primary Domain Name Server	202.96.128.86

#### Step 5) CELL STATUS check test

From sender's phone number 13798257916, send "cellstatus" to router sim/uim card number. At the router "System Log", there is info similar " received index=0 msg (cellstatus) from (13798257916) !". The router will feedback the CELL STATUS to sender's phone number 13798257916. At 13798257916, we will get message of "Router SN:086412090002 cell\_link\_up".